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HOLLAND COUNTY COUNCIL

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LINCOLNSHIRE

Annual Report

ON THE

County Health Services

PART 2.

Report

OF THE

Medical Officer of Health

BY

H. C. JENNINGS,

M.B., B.S., M.R.C.S., L.R.C.P., D.P.H.

1929.



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**To the Chairman and Members of the Public Health and
Housing Committee and the Maternity and Child Welfare
Committee.**

Ladies and Gentlemen,

I have pleasure in submitting my Annual Report for the year 1929. The birth rate for the year is 19.4 per 1,000 of the population, a decrease as compared with 20.6 for 1928. The death rate of 13.1 is a definite increase on that for 1928 which was 11.2. The infantile death rate is 63, that for England and Wales being 74.

The Local Government Act, 1929, which aims at unifying the Health Services, came into force on April 1st, 1930. This Act is a landmark in the progress of Public Health administration and should do much to prevent wasteful overlapping in connection with Hospitals and Medical Services generally. In order that accommodation for the sick in Hospitals throughout the area may be as comprehensive and efficient as possible, cordial co-operation between the Voluntary Hospitals and the Local Authority is absolutely essential.

My thanks are due to Dr. Kynaston and Dr. Ashworth for help in compiling this Report, especially the former, who is largely responsible for the section on tuberculosis.

I should again like to express my appreciation of the good work and loyal co-operation of the whole staff,—medical, nursing and clerical.

I am,

Ladies and Gentlemen,

Your obedient Servant,

H. C. JENNINGS.

*County Hall,
Boston,
May, 1930.*

PUBLIC HEALTH AND HOUSING COMMITTEE.

Councillor S. S. RENDALL, M.B. (Chairman).

Ald. R. Coupland.	Coun. H. J. B. Cooke.
Ald. F. Howard.	Coun. R. M. Fletcher.
Ald. T. Kitwood.	Coun. E. Freemantle.
Ald. R. Riddington.	Coun. R. Gleed, D.L.
Coun. W. A. Atton.	Coun. J. H. Mountain.
Coun. T. W. Banks.	Coun. J. S. Patchett.
Coun. J. T. Biggadike.	Coun. G. Parker.
Coun. E. W. Bowser.	Coun. R. Salter.
Coun. F. Baxter.	Coun. E. I. R. Stapleton.
	Coun. S. Wain.

MATERNITY AND CHILD WELFARE COMMITTEE

Councillor S. S. RENDALL, M.B. (Chairman).

Ald. R. Coupland.	Coun. R. Gleed, D.L.
Ald. R. Riddington.	Coun. J. H. Mountain.
Coun. J. T. Biggadike.	Coun. J. S. Patchett.
Coun. F. Baxter.	Coun. G. Parker.
Coun. H. J. B. Cooke.	Coun. R. Salter.
Coun. Freemantle.	Coun. E. I. R. Stapleton.
	Coun. S. Wain.

with Miss E. M. Maples, Mrs. R. Coupland, and Mrs. Nicholas

STAFF.

County Medical Officer of Health :

H. C. Jennings, M.B., B.S., M.R.C.S., D.P.H.

Assistant Medical Officers of Health :

A. H. Kynaston, M.R.C.S., L.R.C.P., D.P.H.
 Esther Ashworth, M.B., D.P.H., D.T.M.

Matron, Holland Sanatorium :

Miss M. Shipstone.

Health Visitors :

Miss Black.	Miss O'Donoghue
Miss Edgeller	Miss Parsons.
Miss Lewis.	Miss Robinson.
Miss Spencer.	

Chief Clerk :

Walter Ingram.

GENERAL PROVISION OF HEALTH SERVICES IN THE AREA.

HOSPITALS.

(a) TUBERCULOSIS.

The Holland Sanatorium situated on the southern outskirts of Boston ($1\frac{1}{2}$ miles from station) provides accommodation for 26 cases of advanced tuberculosis. This Institution is provided by the County Council.

(b) FEVER AND SMALL-POX.

Boston (Urban and Rural Joint Board) contains 17 beds. Adjoining this hospital are two smaller pavilions :—

- (1) for small-pox—8 beds.
- (2) Port Sanitary Hospital—8 beds.

Spalding Urban District has a fever hospital accommodating 4 beds and 2 cots. This building is also the only accommodation provided for small-pox cases.

A fever hospital at Fleet provides accommodation for 8 adults and two children living in the Holbeach, Long Sutton and Sutton Bridge Urban Districts and the East Elloe Rural District. Small-pox cases have also to be accommodated in this building.

(c) MATERNITY AND CHILDREN.

There are no hospitals in the area devoted solely to these purposes.

(d) GENERAL.

(1) The Boston Hospital, consisting of 34 beds, is situated in the north of the County.

(2) The Spalding (Johnson) Hospital, in the south of the County, has accommodation for 34 patients.

AMBULANCE FACILITIES.

(a) FEVER CASES.

A motor ambulance is provided in the north of the County by the Boston Urban and Rural Joint Board.

(b) NON-INFECTIOUS AND ACCIDENT CASES.

The St. John Ambulance Brigade provides two motor ambulances, one in Boston, and one in Spalding for such cases.

CLINICS AND TREATMENT CENTRES.

(a) MATERNITY AND CHILD WELFARE CENTRES.

Spalding—The Church Cote. Sessions are held every Tuesday afternoon.

Long Sutton—The Hut. Sessions are held every Friday afternoon.

Crowland—Church Institute. Sessions are held on alternate Thursday afternoons at 2.0 p.m.

(b) SCHOOL CLINIC.

Spalding—Holland House. Sessions are held every Tuesday and Saturday mornings and at such times as are necessary.

(c) TUBERCULOSIS DISPENSARIES.

Boston—Holland Sanatorium. Sessions are held every Wednesday afternoon from 1.30 p.m. to 4.30 p.m.; on Thursday afternoon from 2.30 p.m. to 4.30 p.m.; and on the 2nd and 4th Tuesday evenings at 6.30 p.m.

Spalding—Holland House. Sessions are held every Tuesday morning from 10 a.m. to 12.30 p.m.

Donington—Church Street, 1st and 3rd Thursdays, 10 a.m.

All the above-mentioned are provided by the County Council.

(d) VENEREAL DISEASE CLINICS.

There are no such Clinics within the County area, but arrangements have been made by the County Council whereby such cases may obtain treatment either at Peterborough or Lincoln.

PROFESSIONAL NURSING IN THE HOME.

(a) GENERAL.

At the following places Local District Nursing Associations (affiliated to the Lincolnshire Nursing Association) provide one nurse each for general but not infectious cases:—Donington, Gosberton, Pinchbeck, Spalding (2), Fleet, Holbeach, Holbeach Bank, and Long Sutton and Moulton.

In Boston Borough a voluntary association provides two district nurses for similar purposes.

(b) FOR INFECTIOUS DISEASES.

No arrangements exist.

MIDWIVES.

There are sixteen midwives practising in the area, none of whom is subsidised by the County Council.

MATERNITY HOMES.

There is one registered Maternity Home at Sutton Bridge.

POPULATION.

Census, 1911	.....	.....	.....	.....	.....	82,860
Census, 1921	.....	.....	.....	.....	.....	85,254
Estimated population, 1929 (supplied by Registrar-General)	.....	.....	.....	.....	.....	89,400

The natural increase of population for 1929, by excess of births over deaths was 563, compared with 994 in 1928, and 577 in 1927.

Area in acres (inclusive of inland water)	.....	.....	.....	263,120
Urban Districts	.....	.....	.....	46,247
Rural Districts	.....	.....	.....	216,873
Number of inhabited houses	.....	.....	.....	*20,079
Average number of persons per house	.....	.....	.....	* 4.2
Average number of persons per 100 acres	.....	.....	.....	* 38
Rateable value of County :—				
Approximate product of a 1d. rate	.....	.....	.....	£2,082

* Census 1921.

The general Sanitary Administration of the County is carried out by 11 District Councils.

URBAN DISTRICTS.

<u>District.</u>	<u>Name of M.O.H.</u>	<u>Address.</u>
Boston (Borough)	D. C. Robertson, M.B., D.P.H.	Municipal Buildings, Boston.
Spalding	J. R. Munro, M.D.	15, High Street, Spalding.
Holbeach	W. Ormsby, L.R.C.P., I., L.R.C.S., I., L.M.	Long Sutton.
Long Sutton	R. Murray Barrow, M.B., B.S.	Long Sutton.
Sutton Bridge	G. F. Collins, M.R.C.S., L.R.C.P., I., D.P.H.	Sudeley House, Sutton Bridge.

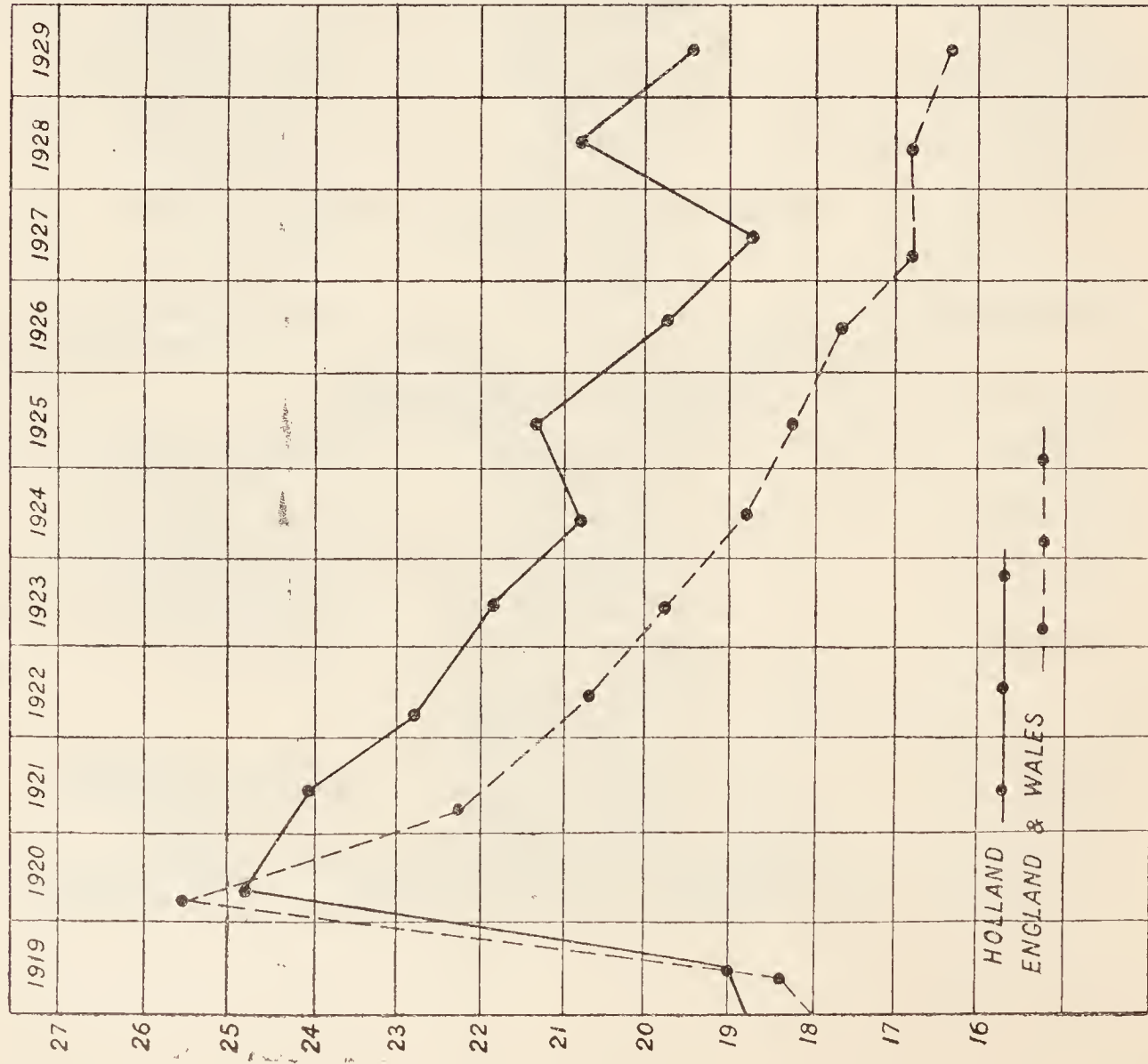
RURAL DISTRICTS.

Boston	D. C. Robertson, M.B., D.P.H.	15, Market Place, Boston.
Spalding	S. H. Perry, M.R.C.S., L.R.C.P.	The Master's Lodge, Spalding.
East Elloe	F. Walker, M.R.C.S., L.R.C.P.	Littlebury House, Holbeach.
Crowland	F. Husband-Clutton, M.R.C.S., L.R.C.P.	Crow land

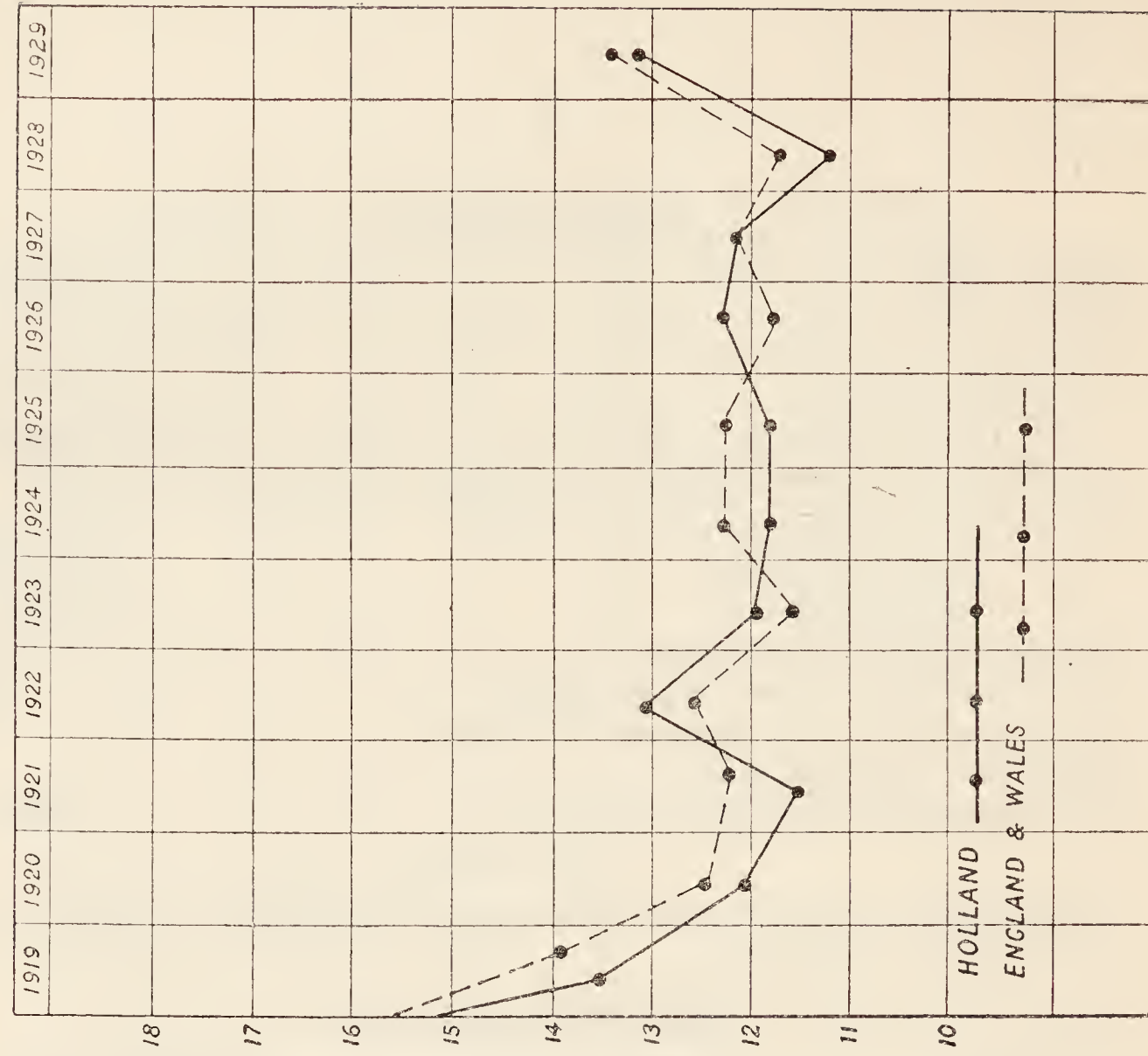
PORTS.

Boston	D. C. Robertson, M.B., D.P.H.	Municipal Buildings, Boston.
Wisbech	C. F. Collins, M.R.C.S., L.R.C.P., I., D.P.H.	Sudeley House, Sutton Bridge.

BIRTH RATES 1919 - 1929



DEATH RATES 1919 - 1929



VITAL STATISTICS.

BIRTHS.

The total number of births registered in the County during the year 1929 was 1,733, as compared with 1,831 in 1928 and 1,660 in 1927.

The rate per thousand of the population shows a decrease, the figure for 1929 being 19.4 as compared with 20.6 for 1928 and 18.8 for 1927.

Crowland Rural District shows the lowest birth rate in the County and Sutton Bridge Urban District the highest, the figures being 17.6 and 27.9 respectively. The birth rate for England and Wales for 1929 was 16.3

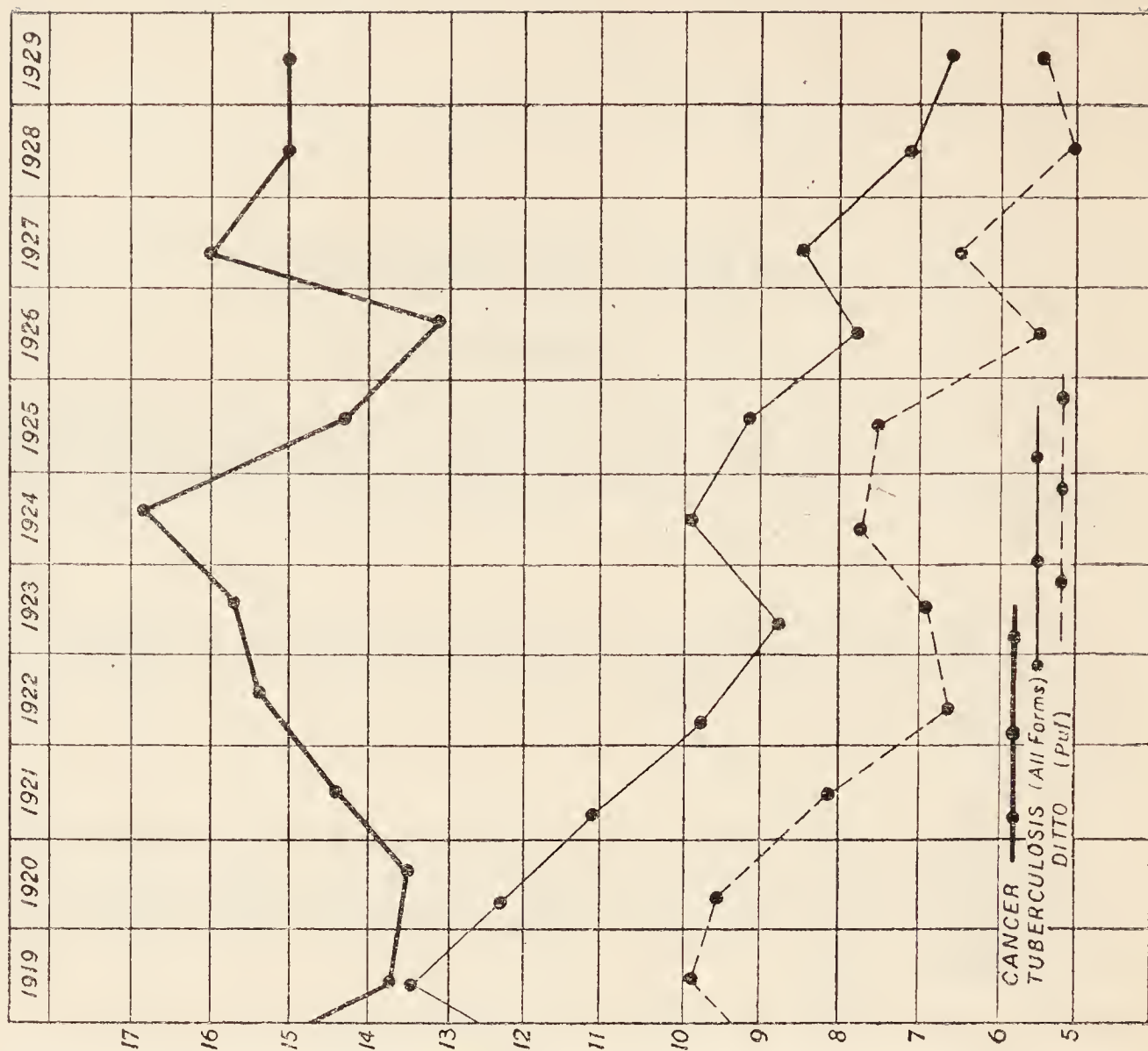
Birth Rates for the various Districts in the year 1929.

Urban Districts.	Rural Districts.
Boston 19.5	Boston 19.9
Spalding 17.7	Spalding 18.1
Holbeach 22.7	East Elloe 18.1
Long Sutton 20.2	Crowland 17.6
Sutton Bridge 27.9	
Whole County 19.4	

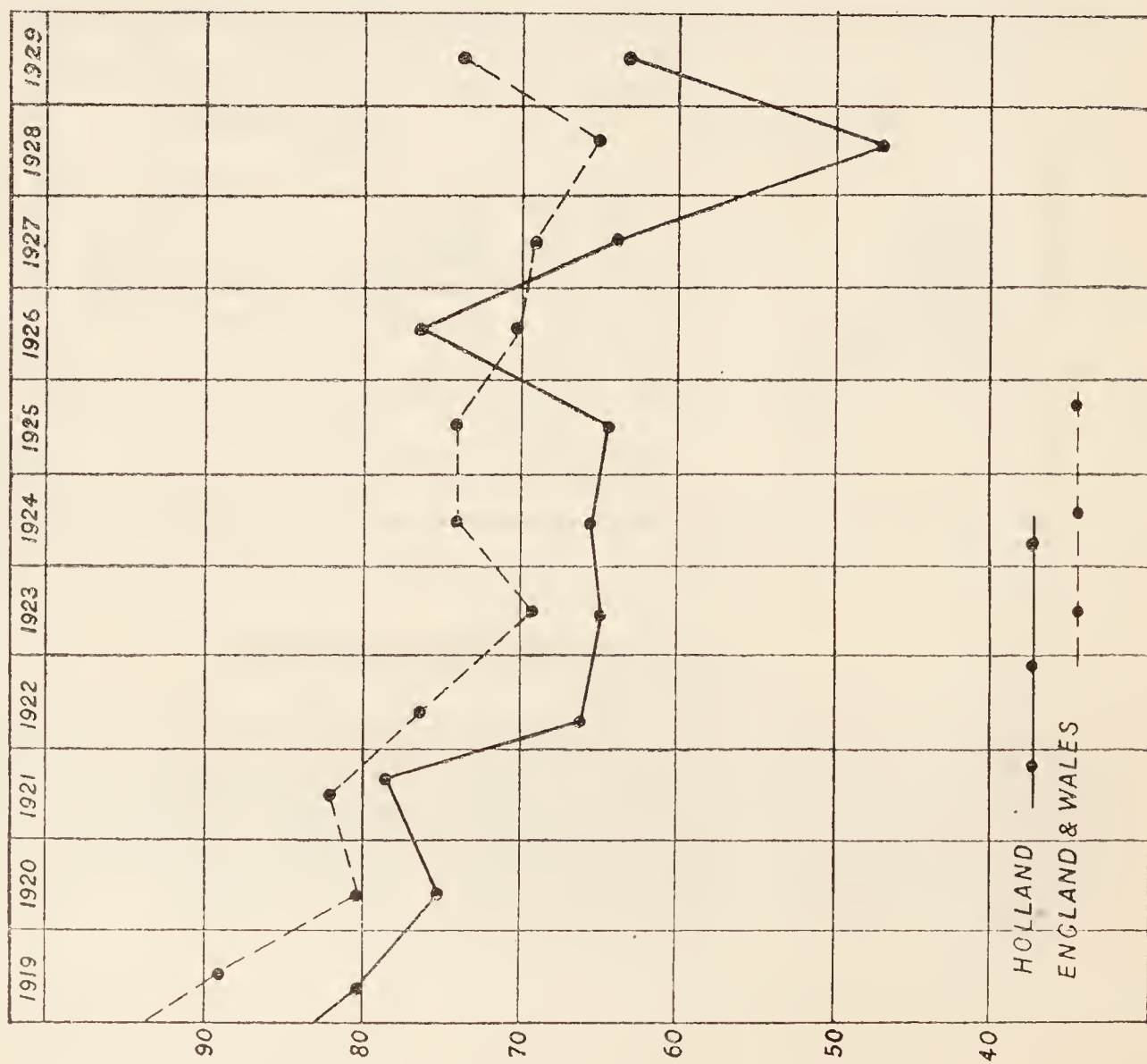
ILLEGITIMATE BIRTHS.

There were 119 illegitimate births in the County during 1929, being 6.8 per cent of the total number of births registered. Of these births, 49 occurred in urban districts and 70 in rural districts. The infantile mortality rate of illegitimate children was 92 as compared with 48 for the legitimate ones.

TUBERCULOUS DISEASES AND CANCER
Mortality Rates per 10000 in the County of Holland 1919-1929



INFANTILE MORTALITY RATES per 1000 registered BIRTHS
1919 - 1929



DEATHS.

The number of deaths during 1929, after correction for inward and outward transfers, was 1,170, as compared with 994 for the previous year. This number gives a rate of 13.1, which is a definite increase on that for 1928, which was 11.2.

The death rate for England and Wales for 1929 was 13.4.

Death Rates for the various Districts in the year 1929.

Urban Districts.		Rural Districts.	
Boston	16.1	Boston	12.4
Spalding	13.5	Spalding	12.5
Holbeach	11.1	East Elloe	9.3
Long Sutton	16.1	Crowland	14.7
Sutton Bridge	11.6		
Whole County 13.1			

Birth, Death and Infant Mortality Rates for Urban and Rural Districts since 1914.

Urban Districts				Rural Districts		
Year	Birth Rate	Death Rate	Infant Mortality Rate	Birth Rate	Death Rate	Infant Mortality Rate
1914	23.5	14.7	113.3	25.1	12.7	73.5
1915	20.8	17.2	103.0	24.3	13.9	88.0
1916	20.6	14.2	69.4	21.9	12.1	59.2
1917	17.3	14.1	103.6	18.9	10.8	81.7
1918	17.6	15.3	107.2	19.1	14.4	71.0
1919	18.1	13.9	74.8	19.8	10.8	85.4
1920	25.2	12.9	84.3	24.3	11.2	67.4
1921	23.1	13.0	80.9	24.8	9.9	75.1
1922	22.5	14.2	62.0	23.1	11.6	67.4
1923	21.6	12.4	62.6	22.0	11.1	67.4
1924	19.9	11.7	57.9	21.2	11.7	71.1
1925	20.2	14.0	66.9	22.1	9.9	45.0
1926	18.5	12.7	76.0	20.7	11.5	80.3
1927	18.8	13.8	60.6	18.9	11.1	76.0
1928	20.2	12.0	36.8	20.9	10.5	53.6
1929	20.0	14.3	59.9	18.8	12.1	65.4

INFANTILE DEATH RATE.

In 1929, 110 infants under one year of age died, giving a rate of 63, as compared with 46 in the previous year for the whole county. The corresponding rate for England and Wales for 1929 was 74.

The figure for 1929, viz., 63, is not so satisfactory, but is no doubt due largely to the marked increase in the rate for the Borough of Boston, namely 103, as compared with 35 for the previous year.

Since the beginning of the present century there has been a steady fall in the infantile mortality rate. This great improvement has been attributed to many causes, but undoubtedly the greatest factor has been education of mothers. As a result the modern mother has been able to approach the problems of child nurture with a wider and more intelligent outlook. The work of Maternity and Child Welfare Centres has certainly helped in the direction of education in child nurture, especially in rural areas where tradition still exercises a marked influence in these matters.

The following table shows a wide variation in the infantile mortality rates for the various districts, which is to some extent due to local conditions. It should also be borne in mind, however, that when the total number of births in any area during one year is a small one, even a small increase in the number of deaths under one year of age will produce a marked increase in the infantile mortality rate.

Infantile mortality rate for the various districts in the year 1929.

Urban Districts.		Rural Districts.	
Boston	103	Boston	84
Spalding	27	Spalding	59
Holbeach	37	East Elloe	48
Long Sutton	15	Crowland	40
Sutton Bridge	15		
Whole County 63			

TABLE A.

VITAL STATISTICS FOR THE YEAR 1929.

Urban and Rural Districts.

Area.		Area in acres.	Persons per acre at Census 1921	Structurally separate dwellings occupied at Census, 1921.	Persons per family at Census, 1921.	Population, Census, 1921.	Population estimated to the middle of 1929.	Births.		Deaths under one year of age.		Nett deaths at all ages belonging to the districts.	Nett death rate.	Death rate from Pulmonary Tuberculosis per 1000 population.	Death rate from all tubercular diseases per 1000 population.
								No.	Rate.	No.	Rate per 1000 births reg'd.				
Urban Districts.															
Boston (Borough)	.. .. .	2727	5.9	3994	4.1	16102	15880	309	19.5	32	103	256	16.1	.9	1.3
Spalding	.. .. .	10747	1.0	2591	4.0	10703	11830	210	17.7	6	27	160	13.5	.6	.6
Holbeach	.. .. .	22666	.2	1257	4.1	5382	5913	134	22.7	5	37	66	11.1	.8	.8
Long Sutton	.. .. .	3931	.8	702	4.4	3192	3168	64	20.2	1	15	51	16.1	—	—
Sutton Bridge	.. .. .	6176	.4	548	4.0	2342	2399	67	27.9	1	15	28	11.6	.8	.8
Rural Districts.															
Boston	.. .. .	85020	.3	5145	4.1	21962	23140	462	19.9	39	84	297	12.4	.38	.4
Spalding	.. .. .	65526	.2	3073	4.2	13381	13910	251	18.1	15	59	174	12.5	.43	.43
East Elloe	.. .. .	52877	.2	2085	4.5	9483	10380	187	18.1	9	48	97	9.3	.4	.4
Crowland	.. .. .	13450	.2	684	4.0	2707	2780	49	17.6	2	40	41	14.7	.4	.7
Whole County	.. .. .	263120	.3	20079	4.1	85254	89400	1733	19.4	110	63	1170	13.1	.54	.66

TABLE B. Infectious Diseases notified in Holland County for the year ending 31st December, 1929

District.	Small Pox	Diphtheria (including Membranous Croup).	Erysipelas.	Scarlet Fever.	Enteric Fever.	Puerperal Fever.	Puerperal Pyrexia.	Encephalitis Lethargica	Ophthalmia Neonatorum.	Pulmonary Tuberculosis.	Other forms of Tuberculosis.	Pneumonia	Cerebro-Spinal Fever	Total	Whether there is an Isolation Hospital for infectious diseases.	Total available beds.	Number of diseases that can be treated concurrently.
Urban Districts.																	
Boston	9	104	6	31	5	..	2	2	2	32	5	11	..	209	Yes	*17	2
Spalding	5	21	7	8	..	..	1	..	5	9	4	..	..	60	Yes	6	1
Holbeach .. ..	..	2	2	14	..	..	..	..	..	3	3	..	..	24	..	†10	2
Long Sutton .. ..	..	1	..	..	1	..	..	..	..	..	..	..	..	2	..	†	..
Sutton Bridge .. ..	..	..	..	2	..	..	..	..	..	1	..	2	..	5	..	†	..
Rural Districts.																	
Boston	10	54	5	32	..	..	1	..	1	35	7	17	1	163	..	*	..
Spalding .. ..	..	16	4	69	1	..	..	..	..	11	4	..	..	105	Yes	‡4	1
East Elloe .. ..	..	6	1	8	..	1	1	..	3	5	3	1	..	29	..	†	..
Crowland .. ..	..	2	..	..	..	..	..	..	2	1	1	8	..	14	..	†	..
	24	206	25	164	7	1	5	2	13	97	27	39	1	611			

* These contribute to a joint Hospital situated at Boston.

† These contribute to a joint Hospital situated at Fleet (Holbeach).

‡ This Authority pays a yearly fee for the admission of small-pox and other fever cases to the Peterborough Fever Hospital.

§ This Authority contributes to a joint Hospital situated at Bourne.

INFECTIOUS DISEASES.

SMALL POX.

The total number of cases of this disease notified during the year was 24, all of which were of a mild character and no deaths occurred. The districts affected were the Borough of Boston 9 cases, Spalding Urban District 5 cases, and Boston Rural District 10 cases. The measures taken by the Local Authorities concerned were successful in limiting the outbreaks to the numbers as stated above.

In many parts of the County infant vaccination is much neglected, and it is again necessary to remind the public that small pox is definitely a disease of choice. It is very unfair that because some people choose to run the risk of contracting the disease the general body of ratepayers should be saddled with the burden of expense incurred in combating an outbreak of the disease.

ENTERIC FEVER.

This disease which in past years used to figure largely in the death returns is now one of the smallest factors affecting the death rate of an area. Seven (7) cases of this disease were notified during 1929, three of which died.

SCARLET FEVER.

Notifications of this disease numbered 163 during 1929, a reduction on that for the previous year, when 256 cases were notified. There was only one death from the disease. Home isolation of this disease in the greater part of the County is an impossibility, and the need for further hospital accommodation is urgent.

DIPHTHERIA.

The number of notifications again showed a marked increase over that for the previous year, those for 1929 being 206, and for 1928, 160. As last year, most of the cases occurred in the Borough of Boston and surrounding rural district (158 out of 206). In view of these facts the Boston Borough Council should seriously consider the question of Schick testing and immunising amongst their child population. This branch of preventive medicine should have a double appeal to those in authority, for apart from the saving of child life, the large sums now spent in hospital treatment for the disease would be materially lessened.

Fifteen deaths from diphtheria were recorded for the County area, giving a case mortality of 7.2 per cent.

PUERPERAL FEVER AND PUERPERAL PYREXIA.

During the year 1 case of puerperal fever was notified and 4 of puerperal pyrexia. There was one death. Institutional treatment for these conditions is provided by the Council at the Boston Hospital and the Stamford and Rutland General Infirmary. Such treatment was provided for one case during 1929.

Consultants have been appointed by the County Council for puerperal fever and pyrexia, and medical practitioners can obtain the services of these gentlemen as required.

Whilst there were 1,733 births during 1929, 6 mothers died from conditions directly associated with child-birth. This gives a figure of 3.4 per 1,000. There is no question that a large part of this maternal mortality is preventable, and the provision of antenatal clinics, together with institutional accommodation for difficult cases, etc., etc., would do much to lessen the mortality amongst child-bearing women and at the same time materially lessen the large amount of invalidity which exists amongst these women who do not die.

I hope that maternity beds will be available in the near future in one or more of the institutions which have been taken over by the County Council under the Local Government Act, 1929.

MEASLES.

In no area in the County is the disease notifiable. Five (5) deaths, however, were registered during the year.

WHOOPING COUGH.

Five (5) deaths occurred from this disease, and all were in children of 2 years of age or under.

PNEUMONIA (all forms).

During the year 39 cases of pneumonia were notified, whilst 52 deaths from the same condition were registered.

INFLUENZA.

This disease was epidemic during the early months of the year and 87 deaths were registered.

ENCEPHALITIS LETHARGICA.

Two cases of this disease were notified and both died.

DIARRHOEA.

Diarrhoea was responsible for the death of 9 infants under two years of age.

Although the summer of 1929 was an abnormally dry one, it is satisfactory to record that no epidemic occurred in any area in the County.

OPHTHALMIA NEONATORUM.

During the year 13 cases of ophthalmia were notified and of these four received institutional treatment.

Cases.			Vision unim- paired.	Vision im- paired.	Total blind- ness.	Deaths
Notified	Treated					
	At home	In hospital				
13	9	4	12	1	Nil	Nil

CANCER.

Cancer was responsible for 142 deaths during the year, a figure which is 12 per cent. of the total deaths from all causes. The mortality per 1,000 of the population works out at 1.5, which is the same as the figure for the previous year.

During the last 25 years statistics show that the death rate from cancer has steadily increased. This is partly due to improved methods of diagnosis, especially of the more inaccessible sites.

During the same period, as a result of the activities of Health Authorities throughout the Country, more people have attained the age when cancer is more likely to occur. Unfortunately the cause of cancer has yet to be found, although the search is an unceasing one. It cannot be repeated too often, that early detection of the disease followed by prompt surgical interference offers the only hope of cure.

Table showing the chief killing diseases in Holland County during 1929.

Disease.	Total number of deaths.
Heart Disease	158
Cancer	142
Tuberculosis (all forms)	60
Bronchitis	53
Pneumonia (all forms)	52

CAUSES OF DEATH AT EACH AGE-PERIOD AND IN EACH DISTRICT, 1929.

CAUSES OF DEATH.	Urban Districts.										Rural Districts.								
	Under 1 year.	1 and under 2.	2 and under 3.	3 and under 15.	15 and under 25.	25 and under 45.	45 and under 65.	65 and under 75.	75 and upwards.	All Ages.	Boston.	Spalding.	Holbeach.	Long Sutton.	Sutton Bridge.	Boston.	Spalding.	East Ellie.	Crowland.
Enteric Fever	..	1	2	2	1	3	..	..	..	4	3	2	..	..	..	..	2	..	..
Measles	..	..	2	1	..	..	..	..	..	5	..	..	..	..	..	..	..	1	1
Scarlet Fever	3	..	2	..	..	..	..	..	..	15	8	..	..	..	..	3	3	1	..
Whooping Cough	..	..	3	9	2	1	..	..	..	87	24	7	..	..	..	16	24	7	..
Diphtheria	14	5	5	1	..	4	18	13	27	2	1	..	..	5	1	..	1	1	2
Influenza	..	..	..	..	2	..	..	..	..	2	1	..	..	..	..	..	..	..	..
Encephalitis Lethargica	..	..	..	1	1	..	..	..	..	49	15	..	5	..	2	1	9	4	1
Meningococcal Meningitis	..	..	..	1	14	18	13	3	..	11	7	7	1	..	..	2	6	..	..
Tuberculosis of Respiratory System	..	..	..	1	5	9	57	53	22	142	26	13	11	9	5	43	21	8	6
Other Tuberculous Diseases	1	..	2	1	..	..	1	1	..	11	7	..	..	..	..	2	..	..	1
Cancer, malignant disease	..	..	1	..	..	..	..	..	..	142	26	13	11	..	..	2	..	..	..
Rheumatic Fever	..	..	..	..	1	1	1	4	1	3	1	2	3	..	..	2	..	..	..
Diabetes	..	..	..	..	2	1	6	4	3	16	6	2	3	..	..	2	..	..	..
Cerebral Hemorrhage	..	..	..	..	..	1	18	30	35	84	17	8	4	9	3	26	10	7	..
Heart Disease	..	..	..	5	5	13	26	48	61	158	23	27	11	6	2	45	20	17	7
Arterio-sclerosis	..	..	..	..	..	..	1	12	21	34	6	7	1	..	1	4	3	2	10
Bronchitis	6	..	2	..	2	3	12	9	23	53	12	7	3	2	1	16	6	3	4
Pneumonia (all forms)	9	5	1	..	1	4	5	3	10	52	1	1	2	1	..	5	2	5	1
Other Respiratory Diseases	2	..	2	..	..	1	1	3	3	14	1	2	1	..	..	1	3	1	1
Ulcer of Stomach or Duodenum	1	3	..	..	1	4	5	2	..	13	5	2	..	..	..	3	1	..	..
Diarrhoea, &c. (under 2 years)	6	..	..	..	4	2	..	..	..	9	3	2	..	..	..	3	2	..	..
Appendicitis and Typhilitis	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	3	..	..	..
Cirrhosis of Liver	..	..	..	..	..	3	2	3	..	6	..	..	2	..	..	3	..	..	..
Acute and Chronic Nephritis	..	..	..	..	..	..	4	5	11	23	9	1	2	1	..	5	4	..	1
Puerperal Sepsis	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..
Other accidents & diseases of Pregnancy & Parturition	..	..	..	..	2	3	..	..	..	5	1	1	..	..	..	3	..	..	..
Congenital Debility and Malformation, Prem. Birth	50	..	..	..	..	..	..	..	..	50	15	2	4	..	1	22	4	3	..
Suicide	1	..	3	2	1	2	5	1	1	10	1	8	1	2	1	4	1	5	..
Other deaths from Violence	..	..	..	6	9	11	12	6	44	44	13	52	2	15	10	8	5	25	5
Other Defined Diseases	17	2	4	..	5	16	43	36	267	267	49	..	10	15	10	54	47	25	..
Cause ill-defined or unknown	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ALL CAUSES	110	16	25	29	57	97	239	235	351	1170	256	160	66	51	28	297	174	97	41

TABLE C.

Return showing the work of the Dispensaries during the year 1929.

DIAGNOSIS.	PULMONARY.				NON-PULMONARY.				TOTAL.			
	Adults.		Children.		Adults.		Children.		Adults.		Children.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
A.—New Cases examined during the year (excluding contacts) :— (a) Definitely tuberculous (b) Doubtfully tuberculous (c) Non-tuberculous	44	39	7	4	6	7	3	3	50	46	10	7
B.—Contacts examined during the year :— (a) Definitely tuberculous (b) Doubtfully tuberculous (c) Non-tuberculous	—	—	—	—	—	—	—	—	5	5	3	2
C.—Cases written off the Dispensary Register as (a) Cured (b) Diagnosis not confirmed or non-tuberculous (including cancellation of cases notified in error) D.—Number of Persons on Dispensary Register on December 31st :— (a) Diagnosis completed (b) Diagnosis not completed	—	—	—	—	—	—	—	—	30	30	61	48
	—	—	2	—	—	—	—	—	—	—	2	—
	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	12	20	46	36
	4	1	3	2	3	3	—	—	7	4	3	2
	—	—	—	—	—	—	—	—	48	60	109	90
	152	169	55	36	33	21	24	29	185	190	79	65
	—	—	—	—	—	—	—	—	5	5	3	2

1.—Number of persons on Dispensary Register on January 1st—507.

2.—Number of patients transferred from other areas and of "lost sight of" cases returned—14.

3.—Number of patients transferred to other areas and cases "lost sight of"—23.

4.—Died during the year—54.

5.—Number of observation cases under A (b) and B (b) above in which period of observation exceeded 2 months—9.

6.—Number of attendances at the Dispensary (including Contacts)—1127.

7.—Number of attendances of non-pulmonary cases at Orthopaedic Out-stations for treatment or supervision—Nil.

8.—Number of attendances at General Hospitals or other Institutions approved for the purpose, of patients for (a) "Light" Treatment, (b) Other special forms of treatment—Nil.

9.—Number of patients to whom Dental Treatment was given, at or in connection with the Dispensary—Nil.

10.—Number of consultations with medical practitioners :—

(a) At Homes of Applicants—110.

(b) Otherwise—114.

11.—Number of other visits by Tuberculosis Officers to Homes—565.

12.—Number of visits by Nurses or Health Visitors to Homes for Dispensary purposes—2008

13.—Number of

(a) Specimens of sputum, etc., examined—212.

(b) X-ray examinations made in connection with Dispensary work—30.

14.—Number of Insured Persons on Dispensary Register on the 31st December—162.

15.—Number of Insured Persons under Domiciliary Treatment on the 31st December—51.

16.—Number of reports received during the year in respect of Insured Persons :

(a) Form G.P. 17—12.

(b) Form G.P. 36—129.

Return showing the immediate results of treatment of patients and of observation of doubtful cases discharged from Residential Institutions during the year 1929.

NON-PULMONARY TUBERCULOSIS.

COUNTY LABORATORY.

The following bacteriological examinations were made during 1929 :—

Material	No. Examined	No. Positive
Sputa	388	125
Throat Swabs	86	8
Various	5	nil

The approximate cost of these examinations, if made outside the County, would have been £67.

This work, being carried out in the County's own laboratory, has not only enabled the result of the examinations to be sent more promptly to the physicians concerned, but has been of great service to the Tuberculosis Officers, in allowing them to personally confirm signs of clinical improvement by noting the gradual disappearance of tubercle bacilli from specimens of the patients' sputum.

With the time of the medical staff otherwise fully occupied, examinations requiring a great deal of attention, such as Widal reactions for typhoid fever, water and milk analyses are unable to be made, until such time as the help of a trained laboratory assistant is provided.

TUBERCULOSIS.

The times at which sessions are held at the Dispensaries are shown on page 6.

Attendance at Dispensaries, 1929.

			New Cases*	Total Attendances
Boston	.....	.....	273	786
Spalding	.....	.....	101	255
Donington	.....	.....	20	86

* including Contacts.

Year	1925	1926	1927	1928	1929
Total Attendances	734	867	1046	1243	1127

The above tables show how increasingly the Dispensary services are being utilised and appreciated.

A gratifying feature has been the regularity of attendance, very few patients now failing to attend when called for their periodic examinations, thus enabling adequate supervision and proper "after care" to be maintained.

All cases of tuberculosis on notification are seen by a Tuberculosis Medical Officer, either at a Dispensary or in their own home—unless a definite request that such assistance is not required is received from the notifying doctor—this is extremely rare.

After examination, in conjunction with the patient's own doctor, the patient is offered such form of treatment as is likely to secure the best result—subsequently he is seen at varying intervals until such time as the disease becomes arrested and denotification and removal from the Dispensary Register possible.

Cases in which the diagnosis is in doubt are also investigated by the Tuberculosis Officers, and after clinical examination aided by X-Ray and bacteriological tests, where indicated, or by a period of observation in the Holland Sanatorium a report is made to the patient's doctor.

Table C, facing page 19, gives in detail the work done at the Dispensaries during the year.

There were 60 deaths from all forms of tuberculosis during the year, giving a mortality rate of .66 per 1,000 of the population.

The number of deaths from pulmonary tuberculosis was 49, giving a mortality rate of .54.

The mortality rate for all forms of tuberculosis is the lowest ever recorded for the County as a whole.

It is significant that the death rate from all forms of tuberculosis is more than twice as great in the Borough of Boston than the whole of the rest of the County (1.3 per 1,000 as compared with .55).

CONTACTS.

The number of contacts examined was 116.

The examination of contacts is of the utmost importance, not merely in the detection of early cases, but in affording an opportunity of instilling into those members of a household in which a case of tuberculosis has arisen, such hygienic principles of mode of living as shall prevent contraction of the disease by further members of the family.

One examination and a marking "contact negative," in my opinion gives a false sense of security, and it is hoped to arrange in the future that one week in the year shall be set aside as a "contact week," during which special sessions shall be held at the Dispensaries for an annual examination of all those previously found contact negative; by this means any physical deterioration or likelihood of onset of disease will be noted, and appropriate preventive measures adopted.

SHELTERS.

There are now 30 open-air shelters in use by patients, and periodical visits are paid to see that they are being properly used and kept in repair.

HOME VISITING.

The Tuberculosis Officers paid 565 visits to patients in their own homes, and 2,008 visits were paid by the Health Visitors.

The work of the Health Visitors is extremely valuable in instructing patients how to dispose of sputum without danger to others, in advising as to the free ventilation of rooms without draught and as acting as "liaison officers" between the patients and Tuberculosis Officers so that they may be kept informed of the patients' progress in the intervals between examinations.

EXTRA NOURISHMENT.

Allowances of milk are made to necessitous cases after careful enquiry, pending admission to sanatoria for treatment. During 1929 milk so supplied cost £68/8/7.

Cod liver oil emulsion, when ordered by the Tuberculosis Officers, is supplied at cost price to certain Dispensary cases.

AFTER CARE.

No further steps have been taken in connection with the formation of a Tuberculosis After Care Committee. Under Section 2 of the Public Health (Tuberculosis) Act, 1921, Local Authorities undertaking tuberculosis schemes are empowered to make "such arrangements as they may think desirable" for the after-care of persons who have suffered from tuberculosis. With the transfer of the functions of the Guardians to the Council, all forms of assistance are now administered by one Authority, and this should greatly assist the Council in formulating a comprehensive scheme for tuberculosis after-care. It should thus be possible to consider each case on its merits, taking the family as the unit.

SURGICAL TUBERCULOSIS.

Year by year, the Council maintains some 16 beds for the treatment of surgical cases in special out-County institutions—the duration of treatment of these cases is extremely lengthy, and on discharge some form of apparatus has usually to be worn for many years.

Under the Council's Orthopaedic scheme, clinics are now to be held in the County where these patients can be seen by an Orthopaedic Surgeon, and apparatus maintained and adjusted, without the necessity of making long journeys to the out-patient departments of the special hospitals.

HOLLAND SANATORIUM.

Patients are showing an increasing willingness to accept sanatorium treatment, and a greater appreciation of the necessity for remaining under treatment for a sufficient length of time to allow the disease to become quiescent.

The value of this is shown in the fall of mortality figures, even at the Holland Sanatorium, where the more active and advanced diseased cases are accommodated :—

Year	1924	1925	1926	1927	1928	1929
Number of deaths	23	16	10	15	9	8

Concurrently with this fall in mortality, there has been an increase in the number of those discharged “ disease quiescent ” and “ much improved.”

During 1929, 56 cases were admitted, 14 were discharged with the disease quiescent, 24 were improved, 6 remained stationary, and 8 died.

The cost per patient week for the year ended March 31st, 1929 was £2/11/8, compared with £2/9/6 for 1928.

As in previous years, a great debt of gratitude is owed to those ladies and gentlemen who have provided entertainments for the patients, a very valuable adjunct to a form of treatment which is apt to prove so monotonous.

More particularly is the Sanatorium indebted to the Matron and the members of the Boston Men's Own Society, by whose whole-hearted efforts, sufficient funds were raised to equip each bed with a pair of headphones. This equipment is a great help and tremendously appreciated by patients who must perforce spend so much of their time in bed. Each patient now has at his or her command day by day many hours of education and entertainment.

In addition to the 26 beds at the Holland Sanatorium (4 of which were leased to the Lindsey County Council)—28 beds were provided at Out-County Sanatoria.

Dr. Kynaston reports *inter alia* :—

Encouraging though the year's work has been, the conviction still grows that the eradication of tuberculosis is not a medical problem but a social one.

Probably 98 per cent. of the population have at one time or another been infected by the tubercle bacillus, but not more than 10 per cent. have suffered from it.

With adequate powers of resistance the disease is repelled ; with bad hygienic and economic conditions it has full sway.

Until the wretched housing conditions, which obtain in so many places in the County, are ameliorated, further reduction in the incidence of the disease is unlikely to occur.

The return of patients, who, as the result of treatment, have become "quiescent," to unhealthy homes and to the same condition of work and living under which they had previously broken down, is wasteful in the extreme.

Statistics for the last fifty years show that the incidence of tuberculosis has fallen steadily, but that this fall has been confined to the childhood and post adolescent period.

Adolescent tuberculosis (the most rapidly fatal form) has not shared in this decline.

This is a matter to which much thought and consideration is being devoted, and an extract from the Summary of Notifications on Form A in the County of Holland, Lincs., is not without interest in this connection :—

Primary Notification Form A. (Pulmonary Both Sexes).

Age Periods	1- 5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65
Year 1924	—	5	5	10	11	25	19	9	1
Year 1925	2	5	7	7	15	29	16	12	1
Year 1926	—	4	3	11	26	24	22	6	—
Year 1927	3	9	4	17	23	30	18	15	6
Year 1928	—	13	13	18	23	34	15	9	8
Year 1929	2	11	6	15	23	31	16	8	6

These figures would point to the fact that in the County of Holland the general decline in tuberculosis has yet to make itself felt, but none the less they do bear out the fact that the highest incidence of the disease falls within the age groups 15 to 35.

In my opinion, it is just in these age groups that one would expect to find reduction most difficult of achievement, for it is amongst the adolescents whose resistance has broken down that the tubercle bacillus finds its most flourishing soil.

Adolescence is a time of strenuous endeavour, the battle of life is at its fiercest ; adequate nutrition and rest are sacrificed in an endeavour to "make good," thus it is amongst the debilitated youth and early womanhood that the disease is found in its most devastating and hopeless form.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1912, AND PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS (No. 2), 1918.

Summary of Notifications during the period from the 30th Dec., 1928, to the 28th Dec., 1929, in the County of Holland, Lincs.

Notifications on Form A.													
AGE-PERIODS.	Number of Primary Notifications.										Total Notifi- cations on Form A		
	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65		65 and upwards	Total Primary Notifications.
Pulmonary Males..	—	—	4	2	8	9	13	9	6	3 (2)	1	55	58
Females	—	—	5 (1)	3	2	13	13 (1)	6 (1)	2	1	—	45	46
Non-Pulmonary Males	1	—	2	—	3	—	1	1	—	1	1	10	10
Females	—	2 (1)	—	1	2	1	4	—	—	1	—	11	11
Number of Notifications on Form C													
AGE-PERIODS.	Notifications on Form B.										Poor Law Institutions.	Sanatoria.	
	Number of Primary Notifications.												
	Under 5	5 to 10	10 to 15	Total Primary Notifications.			Total Notifi- cations on Form B						
Pulmonary Males..	—	2	3	5				5				49	
Females	—	1	—	1				1				33	
Non-pulmonary Males..	—	—	—	—				—				4	
Females	—	—	—	—				—				13	

NOTE.—The figures in parentheses show the number of cases coming to the knowledge of the Medical Officer of Health otherwise than by notification under the Public Health (Tuberculosis) Regulations, 1912.

PUBLIC HEALTH (PREVENTION OF TUBERCULOSIS) REGULATIONS, 1925.

No action taken.

PUBLIC HEALTH ACT, 1925.

No action taken.

MINISTRY OF PENSIONS.

Many ex-Service men suffering from tuberculosis are examined by the Tuberculosis Officers on behalf of the Ministry of Pensions.

The extent of this work is shown in the following table :—

Description of Certificate.	Number of Certificates issued.
M.P.M.S.D. 80 & 80 (Revised)	5
M.P.M.S.D. 81a & 81 (Revised).....	8
M.P.A. 36, T.O.....	6
M.P.M.S.D. 81b.....	1
Total.....	20

RESIDENTIAL INSTITUTIONS.

(A) AVERAGE NUMBER OF BEDS AVAILABLE FOR PATIENTS
DURING THE YEAR 1929.

—	Observation.	Pulmonary Tuberculosis.		Non-Pulmonary Tuberculosis.		Total.
		"Sanatorium" Beds.	Hospital Beds.	Disease of Bones and Joints.	Other Conditions.	
Adult Males	{ 1 }	6	10	2	{ 1 }	19
Adult Females		5	9	1	{ — }	16
Children under 15		4	—	5	{ 1 }	10
Total	1	15	19	8	2	45

(B) RETURN SHOWING THE EXTENT OF RESIDENTIAL
TREATMENT DURING THE YEAR 1929.

			In Institutions on Jan. 1.	Admitted during the year.	Discharged during the year.	Died in the Institutions.	In Institutions on Dec. 31.
Number of Patients	Adults	M.	17	57	50	8	16
		F.	11	34	28	1	16
	Child- ren	M.	5	9	11	—	3
		F.	6	9	5	—	10
Number of Observation Cases	Adults	M.	—	3	3	—	—
		F.	2	—	2	—	—
	Child- ren	M.	—	—	—	—	—
		F.	—	—	—	—	—
	Total		41	112	99	9	45

TUBERCULOSIS.
New Cases and Mortality during 1929.

Age Periods.	New Cases.				Deaths.			
	Pulmonary.		Non-Pulmonary.		Pulmonary.		Non-Pulmonary.	
	M.	F.	M.	F.	M.	F.	M.	F.
0—1.....	—	—	1	—	—	—	1	—
1—5.....	—	—	—	3	—	—	—	2
5—10.....	6	7	2	—	—	1	—	—
10—15.....	5	3	—	1	—	—	—	1
15—20.....	8	2	3	2	4	2	3	2
20—25.....	9	13	—	1	4	4	—	—
25—35.....	13	14	1	4	2	5	—	—
35—45.....	9	7	1	—	4	7	—	—
45—55.....	6	2	—	—	2	4	—	1
55—65.....	5	1	1	1	6	1	—	—
65 and upwards	1	—	1	—	3	—	1	—
Totals	62	49	10	12	25	24	5	6

There were 5 non-notified tuberculosis deaths which were 8 per cent. of the total tuberculosis deaths. These 5 deaths were all investigated and I was satisfied in each case that there was no evidence of wilful neglect or refusal to notify. Notification in the area is efficient.

VENEREAL DISEASES.

Persons resident in the County and who are suffering from venereal disease can obtain treatment at the following Clinics :—

V.D. Clinics.

Time Table.

Peterborough 28, Fitzwilliam Street.

Men—Tuesdays and Fridays : 6 p.m. to 7 p.m.

Women and Children—Tuesdays and Fridays : 5 p.m. to 6 p.m.

Intermediate treatment for males : 6 p.m. to 7 p.m. daily.

Intermediate treatment for females : At times to suit patients.

Lincoln Beaumont Rec.

Males—Mondays and Thursdays : 5 p.m.

Women and Children—Mondays and Thursdays : 12.30 p.m.

In connection with this work the following examinations were made for medical practitioners :—

Wassermann Reactions—6

Railway fares amounting to £121 ls. 2d. were refunded to patients who were unable to bear the cost.

One application has been received from a medical practitioner for the free supply of arseno-benzol compounds.

Abstract relating to persons treated at the Venereal Diseases Treatment Centres.

	Lincoln	Peterborough
A. Number of persons dealt with for the first time and found to be suffering from—		
Syphilis	8	5
Soft Chancre	—	—
Gonorrhœa	7	22
Conditions other than venereal	—	3
Total	15	30
B. Attendances of all patients.....	396	1066
C. Aggregate in-patient days.....	—	—
D. Number of Doses of arseno-benzol		
substitutes Out-patients ..	167	180
In-patients ..	—	—

The figures in the foregoing table by no means represent the total number of cases of venereal diseases occurring in the County, as a certain number of patients receive treatment from medical practitioners.

VENEREAL DISEASE ACT, 1917.

No action taken.

MATERNITY AND CHILD WELFARE.

MIDWIVES ACTS, 1902 AND 1918.

MIDWIVES AND MATERNITY HOMES ACT, 1926.

The County Medical Officer is the Inspectors of Midwives under the above-mentioned Acts. Some of this work, more especially in the south of the County, is delegated to Dr. Esther Ashworth, an Assistant County Medical Officer.

Apart from the routine inspection (88 of which were made during the year), special enquiries are made in all cases of rise of temperature, still-birth, inflammation of the eyes, and death of the child.

As in past years certain unqualified women have been brought to the notice of the Local Authority because of attendance upon women in labour, no medical men being present. Careful enquiries were made in four such cases and the women concerned interviewed by one of the medical officers. In all these cases the circumstances were such that the plea of "sudden or urgent necessity" was a valid one. Each of these unqualified women was warned as to her future conduct.

The provision of an adequate midwifery service, even if subsidised and controlled by the County Council, is an urgent necessity in the most sparsely populated districts in the area.

Classification of Cases for which Medical Help was sought during the year 1929.

PREGNANCY.

Ante-partum haemorrhage	.....	.....	3
Abortion	.....	.....	3
Swelling of legs.....	.....	.....	2
Albuminuria	.....	.....	1
Other Conditions	.....	.....	7
			— 15

LABOUR.

Malpresentation	.....	.....	3
Excessive Bleeding	.....	.....	2
Retained placenta	.....	.....	2
Ruptured perineum	.....	.....	18
Delay in labour	.....	.....	37
Other Conditions	.....	.....	1
			— 63

L, YING-IN.

Rise of temperature	6
White leg	1
	—7

CHILD.

Dangerous feebleness	3
Inflammation of eyes	9
Still-birth	4
Other Conditions	6
	— 22
	<hr/> 107 <hr/>

During the year all medical practitioners and midwives within the County were informed that sterilised maternity outfits were obtainable from the Health Department at cost price plus postage. The outfits are of two sizes (see below) and cost 6/9 and 3/9 each post free.

NO. 1 OUTFIT.

1 obstetric binder
 2 special bed sheets, 57 inches x 40 inches.
 1 packet absorbent wadding.
 2 sheets waterproof paper, 29 inches x 36 inches.
 7 large maternity pads.
 7 extra large maternity pads.
 6 safety pins.
 3 umbilical pads.
 1 packet linen thread.
 1 accouchment sheet, 12 inches x 12 inches.

NO. 2 OUTFIT.

6 maternity pads—extra large.
 6 maternity pads—large.
 8oz. cotton wool—interleaved.
 2 waterproof sheets, 29 inches x 36 inches.
 6 safety pins.

14 of these outfits (11 large and 3 small) were supplied during the year.

Claims for the payment of fees in accordance with Section 14 of the Midwives' Act, 1918, were received from 17 medical practitioners to the amount of £125/17/0. This shows an increase of £36/19/0 as compared with 1928.

The sum of £11/5/0 was recovered from patients after careful enquiry into the financial circumstances of the household.

Births notified during 1929—1,395.

Births registered during 1929—1,484.

The following Table shows the number of visits and re-visits paid to infants by the Health Visitors during 1929 :—

To children under 1 year—First visits	1533
Re-visits	4274
To children from 1 to 5 years.....	5460
Total	11267

INFANT WELFARE CENTRES.

The work at the four Centres continues to progress very satisfactorily. The Centre at Crowland has filled a long-felt want and does much good work in that area. The need for a centre at Holbeach becomes more obvious as time goes on, and I should very much like to see one opened in that town during the coming year.

The attendances at the Welfare Centres during the year were as follows :—

	Spalding	Long Sutton	Crowland
Number of Sessions	47	48	25
NEW CASES :			
Mothers	129	47	28
Children under 1 year	117	39	27
Children over 1 year	27	23	2
OLD CASES :			
Mothers	1287	565	382
Children under 1 year	1143	297	192
Children over 1 year	854	323	353
Number of Consultations	459	170	284
Number of Health Talks.....	—	—	2
Ante-natal Attendances	12	3	9

BOSTON WELFARE CENTRE.

Attendance of mothers and babies resident in the County :—

New babies attending Centre	116
Attendance of babies with mothers seen by Medical Officer weekly or monthly as required	757
All other attendances of mothers with babies	855

I must again express my appreciation of the work done at each of the County Centres by the several Ladies' Voluntary Committees.

During the year 1903 1bs. of dried milk and 98lbs. of Virol were sold at the Welfare Centres at cost price, or less than cost price according to financial circumstances.

Dr. Ashworth reports as follows in connection with her work at the Centres :—

“ Progress has been maintained at the various Centres, and the mothers attending continue to take a keen interest in the activities of the Centres. This interest is not confined to the first-born, but succeeding babies are brought, and several mothers attend regularly with two or three children under 5 years of age.

It has given me great pleasure during 1929 to find at infant school inspections an increasing number of Welfare children as entrants. This ensures the continuity in the Health Services which is so much to be desired, and is a hopeful sign for future work.

Unfortunately there has been no advance in ante-natal work, since the necessary facilities have not been provided.

An Infant* Welfare Centre and Tuberculosis Dispensary at Holbeach would be of great benefit to many mothers in that district. Travelling expenses to Spalding are a serious consideration to many mothers of large families who desire advice but are thus prevented from obtaining the same."

NURSING HOMES REGISTRATION ACT, 1927.

One application was received for the registration of premises as a maternity home and a licence was granted by the Council.

BLIND PERSONS ACT, 1920.

The work under this Act is delegated by the Council to the Boston and Holland Blind Society, to whom a grant of £350 is made annually.

BLIND PERSONS IN COUNTY OF HOLLAND.

Age Period.							Total Blind.
0—5	.....	.....	.....	.....	.....	.....	3
5—16	.....	.....	.....	.....	.....	.....	9
16—21	.....	.....	.....	.....	.....	.....	5
21—50	.....	.....	.....	.....	.....	.....	37
50—70	.....	.....	.....	.....	.....	.....	41
70 and upwards	.....	.....	.....	.....	.....	.....	45
							<hr/>
				Total	.....	.....	140

Age at which Blindness occurred.

Age Period.							Number.
0— 1	.....	.....	.....	.....	.....	.....	15
1— 5	.....	.....	.....	.....	.....	.....	7
5—10	.....	.....	.....	.....	.....	.....	5
10—20	.....	.....	.....	.....	.....	.....	7
20—30	.....	.....	.....	.....	.....	.....	13
30—40	.....	.....	.....	.....	.....	.....	10
40—50	.....	.....	.....	.....	.....	.....	16
50—60	.....	.....	.....	.....	.....	.....	19
60—70	.....	.....	.....	.....	.....	.....	25
70 and upwards	.....	.....	.....	.....	.....	.....	21
Unknown	.....	.....	.....	.....	.....	.....	2
Total							140

The Report of the Society upon the work done during the year ended March 31st, 1930, is as follows :—

The Committee regret to report a further increase in the number of blind persons on the Society's register, the number now being 140, as against 135 a year ago. There have been 14 new cases during the year and one removal from another district. Ten deaths have occurred and one blind person has left the district. Nineteen cases are now under observation.

The Committee greatly appreciate the financial support given to the Society during the past year, but they have reason to believe that it is not yet fully realised that the responsibility for the welfare of all the civilian blind in the County of Holland rests with this Society, and they hope that the time will soon come when every parish in the area will take its share of the financial burden.

Five children are receiving elementary education at schools recognised by the Board of Education as efficient schools for the education of the blind. The cost of the education has been borne by the County Education Committee, Boards of Guardians, and contributions from parents. Two young men have completed their technical training during the year. One of them is now a boot and shoe repairer at Long Sutton, and the other is employed as a basket-maker in the Nottingham Institution workshop. For the first time for at least ten years, there are now no cases receiving technical training.

The Society has eight blind Home Workers, of whom seven are attached to the Royal Midland Institution for the Blind at Nottingham, for assistance and supervision. The occupations carried on by these Home Workers are hand machine-knitting, chair-caning, boot and shoe repairing and straw-basket making. The other Home Worker is attached to the National Library for the Blind for whom she copies books in Braille. The earnings of these Home Workers are augmented out of the funds of the Society, the rate of augmentation varying from five to ten shillings a week according to their earnings. Orders for socks and stockings and straw baskets, and chair caning are greatly needed and orders may be given at Sunnitholme, Pen Street, Boston.

The visitation of the blind in their own homes and the teaching of them when possible of handicrafts and embossed types, continues to be carried on by Miss Booth, who has been blind from birth and who thoroughly understands the blind and their needs, and by a sighted lady assistant, Miss Thorpe, who chiefly visits or teaches those who live in outlying places. The latter is employed for three days a week.

There are now seven residents at Sunnihilme, the Home and Hostel for Blind Women, and seven others have lived there for varying periods during the year.

The sum of £309 has been given to necessitous blind during the year, the greater part of it having been given as regular allowances. The pleasure and freedom from anxiety resulting from these gifts cannot be estimated.

Once a month in Boston there is an entertainment for the blind, and also a meeting for reading aloud, together with light refreshments. On July 13th there was a garden party for the blind and their friends in the grounds of Hussey House, kindly lent by Mrs. T. Smith. An excellent tea was served on the lawn, and later in the evening refreshments were handed round. The amusements consisted of competitions, recitals, gramophone selections, and music by Mr. Rippin's Band, who kindly gave their services. Mr. and Mrs. Smith did their utmost to secure the comfort and pleasure of the guests, and a most happy time was spent. A New Year's Party for the blind and their friends was given by the Society in the Red Lion Street Congregational Schoolroom, Boston, on January 6th, when there was a tea followed by a programme of music, recitals, etc. A very happy social evening was also provided by the Men's Own Society Committee, who had arranged for a liberal supply of refreshments, sweets, cigarettes, and a first-class musical programme.

Thirteen blind persons have the use of wireless sets provided out of the Wireless Fund. The proprietors of the *Daily Mail* very kindly gave some exceptionally good wireless sets through the British Wireless Fund for the Blind, and Mrs. Jane Fountain, of Wrangle, was fortunate enough to have one of these sets allocated to her use. It is hoped that some further sets may be obtained through the Fund.

Prevention of blindness is one of the objects of the Society, and help is frequently given to those suffering from eye trouble to obtain expert advice or treatment or glasses.

The Committee are glad to be able to report that Mrs. H. P. Carter, of Holbeach, and Dr. Rendall, of Boston, Chairman of the Holland County Council Health Committee, have accepted seats on the Committee.

The Committee gratefully acknowledge their indebtedness to the honorary officers of the Society for their constant and unstinted service ; to Mr. T. H. Cresswell, D.O. (Oxon.), M.R.C.S., L.R.C.P., and Mr. S. T. Parker, F.R.C.S., for giving free consultations ; to Mr. D. MacTaggart, L.D.S., for free dental treatment on the recommendations of the Society ; and the members and officials of the Holland County Council, Boards of Guardians, and other local authorities for their unfailing courtesy and sympathetic help.

TABLE E.

TUBERCULOSIS ORDER, 1925.

		Number of premises on which disease was reported but not confirmed by Veterinary Inspector.	Number of premises on which disease was declared to exist by Veterinary Inspector.			Total number of Bovine Animals on premises (other than a market, fair, or saleyard).	Total number of animals examined by Veterinary Inspector.	Total number of animals reported as diseased by Veterinary Inspector.					Conclusions from Post-Mortem.					Total number of animals slaughtered.	Total compensation paid.	Total salvage.	
								A	B	C	D	Total number of cases in which the diagnosis was aided by use of Tuberculin.	A	B	C	D	E				
																					Total number of Animals.
								Tuberculosis of the udder.	Giving Tuberculous Milk.	Tuberculous Emaciation.	Chronic cough and showing definite clinical signs of tuberculosis.	Total number of cases in which the diagnosis was aided by use of Tuberculin.	Having tuberculosis of the udder.	Giving tuberculous milk and showing lesions of Tuberculosis.	Suffering from Tuberculous Emaciation.	Affected but not as in columns A, B and C.	Not affected.				
10	72	Cows in Milk	354	168	2	—	21	—	10	7	—	19	1	—	27	£	s.	d.	£	s.	d.
		Other Cows or Heifers	288	201	1	—	38	1	16	1	—	37	2	—	40	100	10	0	29	15	0
		Other Bovine Animals	902	366	—	—	7	—	2	—	—	7	—	—	6	18	0	0	4	2	0
10	72		1544	735	3	—	66	1	28	8	—	63	3	—	73	£188	5	0	£54	7	0

FOOD AND DRUGS ACTS.

The official responsible for the administration of these Acts is the Chief Constable of the County, the sampling officers being Police Inspectors. The following information has been taken from the quarterly reports of the County Analyst, Mr. Gerrans, F.I.C. :—

Nature of Articles submitted for Analysis.	By whom submitted	Result of Analysis.	Observations
37 Milk	Inspectors Boston and Spalding	Genuine	
3 Milk	"	Adulterated as under :— 1. 11% fat deficient 2. 7% fat deficient 3. 5% fat deficient	
7 Butter	"	Genuine	
2 Cheese	"	Genuine	
1 Margarine	"	Genuine	
1 Margarine	"	Inferior	
2 Ground Rice	"	Genuine	
2 Pepper	"	Genuine	
3 Cocoa	"	Genuine	
1 Arrowroot	"	Genuine	
1 Camphorated Oil	"	Genuine	
2 Rice	"	Genuine	
2 Flour	"	Genuine	
1 Condensed Skimmed Milk	"	Genuine	
2 Fish Paste	"	Genuine	
1 Whisky	"	Genuine	
1 Rum	"	Genuine	
1 Brandy	"	Genuine	
1 Gin	"	Genuine	
1 Tincture of Iodine	"	Genuine	
1 Tincture of Quinine	"	Genuine	
1 Gregory Powder	"	Genuine	
1 Egg Powder	"	Genuine	
1 Cornflour	"	Genuine	
1 Honey	"	Genuine	
1 Custard Powder	"	Genuine	
2 Baking Powder.....	"	Genuine	
2 Oatmeal.....	"	Genuine	
1 Pork Sausage	"	Genuine	
1 Coffee.....	"	Genuine	
1 Sweet Spirit of Nitre	"	Genuine	
1 Boric Acid Ointment	"	Genuine	
1 Treacle	"	Genuine	
1 Vinegar	"	Genuine	
1 Bland Pills	"	Genuine	
1 Yeast	"	Genuine	
1 Epsom Salts	"	Genuine	

The following Table shows the results of proceedings taking in cases where samples were found to be adulterated :—

Sample.	Adulteration.	Action taken.	Result.
Milk	11% req. fat deficient	Vendor summoned	Fined £2
Milk	7% req. fat deficient	No proceedings	
Milk	5% req. fat deficient	No proceedings	
Coffee	33% chicory	No proceedings (Disclosure at time of sale)	

PUBLIC HEATH (PRESERVATIVES, etc., IN FOOD) AMENDMENT REGULATIONS.

There were no cases of infringement of these Regulations during the year. Under the Regulations, the only preserving agents permitted in food are Benzoic Acid and Sulphur Dioxide, and these only in certain foods and beverages, the amounts admissible being within the limits laid down in the schedules to the said Regulations.

DAIRIES, COWSHEDS AND MILKSHOPS.

MILK AND DAIRIES (CONSOLIDATION) ACT, 1915.

Under Section 3 of this Act arrangements exist for the sampling of milk for examination for the presence of the tubercle bacillus. During the year 23 such samples were taken and in no case was a positive result obtained, either by direct examination, or by guinea-pig inoculation. The Table facing page 33 shows the work done under the Tuberculosis Order, 1925.

MILK AND DAIRIES ORDER, 1926.

Part IV., Sec. 8.

No inspections of cattle under this Section have been made during the year.

MILK (SPECIAL DESIGNATIONS) ORDER, 1923.

Licences to produce "Grade A" milk were renewed to two farmers, both in the north of the County.

RIVERS POLLUTION PREVENTION ACTS, 1876 and 1893.

On the night of the 12th and the morning of the 13th November, 1929, huge quantities of dead and dying fish passed down the River Witham as a direct result of gross pollution of the river from the Sugar Beet Factory at Bardney: A certain amount of pollution had also taken place in the preceding month.

As a result of this, proceedings were taken by the Lincolnshire Rivers Fishery Board against the Lincolnshire Beet Sugar Co., Ltd. The latter Company pleaded guilty when the case was heard in January, 1930, and fines totalling £50 plus costs were imposed. I understand that the Beet Sugar Company is taking the necessary steps to treat the effluents according to the most modern practice, in order to obviate a recurrence of the pollution next season.

RATS AND MICE DESTRUCTION ACT, 1919.

The officers appointed to carry out the provisions of this Act are the Police Superintendents, and as a direct result of the efforts of these officers much good work continues to be done.

National Rat Week was again observed from the 4th to the 9th November, 1929.

The reports received from the Superintendents of Police give the following information.:—

NORTHERN DIVISION OF COUNTY.

Large posters were exhibited throughout the Division, and hand-bills distributed to property owners, shopkeepers, farmers, etc. Rats to the number of 1,092 were known to have been killed during the week, but this number must naturally have been greatly exceeded, as in many places where poison was used it was impossible to say how many rats had been killed.

As in past years little or no enthusiasm was shown in connection with this matter in the Borough of Boston. As far as is known only 55 rats were killed during the week.

SOUTHERN DIVISION OF COUNTY.

Large posters were displayed throughout the division and hand-bills distributed. The general methods of destruction employed were poisons, ferrets, traps and in some few cases gas (SO_2) was used. Approximately 1,700 rats were known to have been killed during the week,

HOUSING.

The following particulars have been obtained from the Clerks of the several Local Authorities: —

	Houses erected by Council under Housing Acts.	Houses erected by Private Enterprise
Borough of Boston	32	8
Spalding U.D.C.	53	72
Holbeach U.D.C.	21	10
Long Sutton U.D.C.	21	3
Sutton Bridge U.D.C.	none	5
Boston R.D.C.	56	55
Spalding R.D.C.	26	32
East Elloe R.D.C.	60	16
Crowland R.D.C.	none	2

The total number of houses erected during 1929 was 472.

HOUSING (RURAL WORKERS) ACT, 1926.

No applications under this Act were made to the Council during 1929.

WATER SUPPLY.

As a result of the abnormally dry summer many parts of the County suffered acutely from a shortage of water, and in the Borough of Boston although the supply did not fail quantitatively it was of such a character as to be quite unfit for human consumption.

These areas which obtained their supply from deep wells in the chalk, *i.e.*, Spalding Urban District and parts of Spalding Rural District were unaffected and there was no necessity to restrict the quantities used in these areas.

The water supply in Boston was first noticed to be unsatisfactory after about the 23rd August. Samples were then taken for analysis and the results showed the water to be quite unfit for domestic use. A sample taken by the County Public Health Staff was also taken and the result obtained confirmed the previous analyses. A special report was then submitted by me to the Public Health Committee, condemning the Boston Water Supply (see Appendix, page 43 *et seq.*). As a result of the steps taken the Corporation of the Borough of Boston made arrangements for the distribution of water obtained from Willoughby by means of water-carts for the period September 18th to December 4th, 1929.

(Early in 1930 the Corporation of Boston arranged to purchase the Boston Waterworks Company for the sum of £72,000).

I am glad to record that the Holbeach, Long Sutton, and Sutton Bridge Urban District Councils and East Elloe Rural District Council have now decided to form a Joint Water Board and purchase water in bulk from the Spalding Urban Council for the supply of water in the south of the County.

During the year the Spalding Rural District Council extended their water mains to Weston Hills, Moulton Chapel and Cobgate, Moulton. This Council also bought out the Donington Water Company, and propose making extensions in Gosberton Clough, Risegate, Cheal, and Clough, and Quadring in the near future. An extension is also to be made to Surfleet from the bore at Pinchbeck.

REGIONAL WATER COMMITTEE.

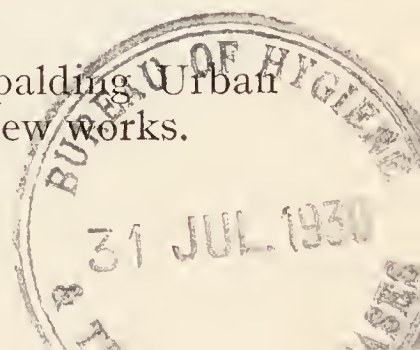
On January 9th, 1929, a conference of representatives of all Local Authorities within the County, together with representatives of water undertakings was convened by the County Council, and at this Meeting a Regional Water Committee was formed. The Committee held three meetings during the year and at the last meeting in September recommended the County Council to engage an Engineer to report upon existing water supplies in the County and to outline a scheme for the supply of water for the whole County. This recommendation was approved by the County Council and the report of the Engineer was received in the early part of 1930. This report which is a very comprehensive one is considered to be of such importance that it is printed in full in the Appendix, page 43.

SEWAGE DISPOSAL.

The work of sewerage the west side of Spalding has continued throughout the year, and at times great difficulties have had to be overcome owing to the nature of the subsoil (moving silt). The work is now complete ; the system was put into operation on the 9th May, 1930. The existing sewage disposal works on the west side of the town have been connected to the new system.

A large number of houses are connected to the new sewers and further connections are steadily being made.

I am indebted to Mr. Hastings, Clerk to the Spalding Urban District Council, for the following description of the new works.



The work comprises the sewerage of that portion of the Urban District Council's area situate on the west side of the River Welland with the exception of (1) the small area in the centre of the town which is already sewerage and gravitates to the existing Sewage Disposal Works—and (2) the more sparsely populated area.

The whole of this area is at an average level of twelve feet above Ordnance Datum and to avoid laying the sewers at too great a depth has been divided into eleven drainage areas.

The length of sewers laid is as follows :—

6ins. diameter—10673 lineal yards.

9ins. diameter— 1547 lineal yards.

12ins. diameter— 488 lineal yards.

or a total of 12,708 lineal yards.

The sewage flows by gravitation to the several pumping stations where it is discharged into pump wells.

Where facilities allow of the storm water being discharged into the River Welland three pumps are provided, one to discharge up to six times the dry weather flow into the rising main delivering at the Outfall Works, one to discharge any flow above this volume direct to the river, and the third to act as a stand-by pump. By an arrangement of valves any pump can discharge either to the Outfall Works or to the River.

Where these facilities do not occur, two pumps, each capable of discharging twelve times the dry weather flow to the Outfall Works, are provided.

The dry weather flow of sewage is based on a water consumption of 20 gallons per head per day, and the plant is capable of pumping twelve times this amount or 240 gallons per head per day, thus amply providing for storm water.

The pumps are of the Stereophagus centrifugal type and whilst pumping disintegrate the solids in suspension, thus avoiding the objectionable process of constantly cleaning and raking screens at the several pumping stations.

Electric motors drive the pumps, which are switched on or cut out by float controls, rising and falling with the sewage. These are so arranged that in the event of one pump—owing to an excessive influx of storm water—not being able to deal with the flow, a second pump comes into operation automatically.

The rising mains are linked up from the several pumping stations to an outfall rising main discharging at the Sewage Disposal Works at West-marsh Road. The total length of cast iron rising mains is 8892 lineal yards.

At the Sewage Disposal Works the sewage is first roughly screened and thence passes through detritus tanks where the heavier solids are deposited. From here up to six times the dry weather flow passes into one or two settling tanks which are of the inverted cone type; here the remaining solids in suspension are removed and the effluent passes to the river.

Any flow exceeding six times the dry weather flow passes into storm water settling tanks, and any excesses beyond this direct to the river.

The sludge will be removed from the bottom of the settling tanks and discharged at a level of 4ft. below the top water level by the pressure exerted by this 4ft. head.

The sludge will be run into trenches cut into the land and covered with the adjoining soil.

The Council has approved of a similar scheme for the east side of the River Welland and tenders are to be invited at an early date, prior to applying to the Ministry of Health for the necessary loan sanction.

REFUSE DISPOSAL.

There are no refuse destructors within the County, and household refuse (including night-soil) in some areas is disposed of by means of dumps. Indiscriminate dumping is a very unsatisfactory method of refuse disposal and gives rise to much annoyance and nuisance. Such dumps become breeding places for flies, rats and crickets, and give rise to foul odours and smoke (when the refuse is on fire as sometimes occurs). In Boston the system known as "controlled tipping" is in operation and is working very satisfactorily. In certain other areas in the County indiscriminate dumping takes place, and I would draw the attention of these authorities to the memorandum on the subject of "controlled tipping" issued by the Ministry of Health in 1922. It is stated *inter alia* that refuse exceeding 100 cubic yards in amount must comply with the following rules :—

(1) The deposit to be made in layers ; (2) No layer to exceed 6ft. in depth ; (3) Each layer to be covered, on all surfaces exposed to the air, with at least 9ins. of earth or other suitable substance, not more than 100 sq. yards to be left uncovered at any one time ; (4) No refuse to be left uncovered for more than seventy-two hours from the time of deposit ; (5) Sufficient screens or other suitable apparatus to be provided, where necessary, to prevent any paper or other debris from being blown by the wind away from the place of deposit.

When these precautions are carried out refuse can be disposed of by dumping without the production of nuisance and at the same time "totting" in the dump is prevented.

MENTAL DEFICIENCY ACT, 1913 and 1927.

The work of Ascertainment and Classification by the Medical Officer, assisted by Health Visitors, School Attendance Officers, Relieving Officers, School Teachers, etc., etc., has progressed steadily during the year, and the following Table shows how the Defectives in the County are at present dealt with :—

Class.	ADULTS.			CHILDREN.		
	In Institutions	Under Supervision	Total	In Institutions	Under Supervision	Total
Idiots	—	4	4	—	4	4
Imbeciles	3	20	23	2	32	34
Moral Defectives	—	1	1	—	—	—
Feeble-minded	8	33	41	—	3	3
	11	58	69	2	39	41

Extracts from Reports received from District Medical Officers.

SPALDING.

Looking at things steadily and as a whole, the Town has a good deal on which to congratulate itself. Few communities can claim so ample and pure a water supply. The other essential public services—gas and electricity—are equal to all demands. A scheme for the disposal of sewage for the west side of the town is now completed and a scheme for the remainder is being developed. A large number of houses were built during the year, and the building programme is not yet complete.

Most of this is due to progressive government of recent years. But there is one activity which does not seem to have kept pace with this progress, that is the method of disposal of refuse. At the risk of being wearisome, I wish again to draw attention to the condition of the Marsh Road dump. It is unique in being our only real eyesore, it is offensive by reason of the smell, and it is a breeding place for rats. I would like to ask the Council to humour me by, at least, considering the present cost of a destructor sufficient for our needs.

Before I close my report I feel I ought to make some remarks on the extensive powers given to the Public Assistance Committee of the County Council. Hitherto the principal public body dealing with the treatment of disease has been the Insurance Committee, but now the County Council has entered this field as distinct from the prevention of disease, and its possibilities in the future are limitless. In so far as it aims at a healthier and happier England it will have all the help possible from the medical profession, and I believe the goodwill and assistance of this and similar authorities.

LONG SUTTON.

The state of the health of the town and district has again been most satisfactory. During the long period of drought in the summer some anxiety was felt as to contamination of water supplies. No epidemic arose and there were no cases of summer diarrhoea. There has been, on the whole, a general freedom from infectious complaints.

EAST ELLOE.

The number of patients treated in the Fever Hospital continues to increase annually, and during 1929 thirty cases from this neighbourhood were admitted. On two occasions admissions had to be refused on account of want of accommodation, and the enlargement of this Hospital would appear to be needed in the near future.

The dry summer again showed the necessity of a regular water supply, and it is satisfactory to be able to report that a great deal of progress in connection with this matter has been made by the Council in conjunction with neighbouring authorities, and an abundant supply of good water appears to be likely in the near future.

SPALDING (Rural District).

There has been a marked improvement in the social conditions of the inhabitants during the last 10 to 15 years, in housing, clothing and food. There is, however, at present considerable unemployment amongst agricultural labourers, who form a very large proportion of the inhabitants, and the outlook is not good.

The scarlet fever epidemic was a continuation of that at Gosberton during the previous year, when 87 cases occurred. It has been an exceedingly mild epidemic on the whole, indeed out of 161 cases reported (in 1928 and 1929) there has only been one death. The mildness of so many of the cases makes it reasonable to suspect that a considerable number escaped recognition by parents and relatives, and thus added to the spread of the disease. Many adults suffered, 3 per cent. being over 20 years of age. No reason for blaming the milk supply has been found and the water supply is undoubtedly free from suspicion.

SUTTON BRIDGE.

The water supply remains the same, rainwater and deep wells supplying the district. The Council have assiduously followed up their initiative of last year. In June, 1929, Sir A. Binnie, Water Engineer, of London, reported that it had been found practical and economical to provide a supply of water for the three urban areas—Sutton Bridge, Long Sutton, Holbeach, and the East Elloe Rural District. A Joint Water Board is to be set up and it has been unanimously agreed to adopt the scheme. This Council may well be complimented on the way they have surmounted the legal and other difficulties which have arisen from time to time. The source of supply as mentioned in my last report is from Bourne.

APPENDIX

HOLLAND AND PARTS OF LINDSEY—LINCOLNSHIRE. WATER SUPPLY.

REPORT OF ENGINEERS—MESSRS. SIR ALEX. BINNIE,
SON & DEACON.

TERMS OF REFERENCE.

(1) By your letter of the 8th October, 1929, you informed us that at the request of the Regional Water Committee your Council had passed a resolution that we were to prepare a Report and to make recommendations with regard to the Water Supply for all parts of the Administrative County of Holland, and at an interview with you and Mr. Scorer at this office on the 16th October, 1929, we were informed that it had been arranged that the report should also deal with the Water Supply of the Fen area of the County of Lindsey, situate roughly in the areas of the Spilsby Rural District Council and the Sibsey Rural District Council.

INSPECTION.

(2) Our Partner, Mr. Gourley, visited the districts in question and the sources of supply of the Boston Waterworks Company, and of the Spalding Urban District Council on October 21st—24th, and November 14th—16th, 1929.

AREA OF SUPPLY.

(3) On the accompanying 1-inch map we have edged in blue the area of supply which we would propose.

(4) On this map we have not differentiated between those areas which already have a piped supply, as an examination of the matter has led us definitely to conclude that the most economical way in which the supply of the area as a whole can be dealt with is by way of pooling the more prolific of the existing sources.

(5) The area of the County of Holland included within this boundary is given as 217,100 acres, or 339 square miles (including inland water), of which 46,247 acres, or 21.2% is the area of the Municipal Boroughs and Urban Districts, and the remaining 170,853 acres—267 square miles, or 78.8% is the area of the Rural District.

(6) The area of the Rural Districts of Sibsey, Spilsby and Horncastle, which comes within the limits of the scheme, is estimated to be about 137 square miles, the total area embraced by the blue boundary being 476 square miles.

CENSUS POPULATIONS.

(7) The Census populations of the component parts of the area are set out on Table No. 1 (see Appendix).

(8) The total population of the area lying within the blue line amounted to 86,899 at the Census of 1911, and 89,585 at the 1921 Census, showing an increase of 2,686 persons, or 3.1% between 1911 and 1921.

(9) The following Parishes of the Rural District of Spilsby are included :—Friskney, Wainfleet St. Mary, Wainfleet All Saints, Thorpe St. Peter, Eastville, Little Steeping, Halton Holegate, Toynton St. Peter, Toynton All Saints, New Leake, East Keal, West Keal, Hagnaby, East Kirkby, Stickford, Midville, and West Fen ; and the following Parishes of Horncastle Rural District :—Miningsby, Revesby, Mareham-le-Fen, Tumberby, Coningsby, and Wildmore (see map).

(10) The Bourne Urban District Council are supplied by the Spalding Urban District Council, and had a population of 4,343 in 1911, and 4,319 in 1921, which would increase the above figures to 91,242 and 93,904 respectively.

POPULATIONS TO BE SUPPLIED AND QUANTITY.

(11) The population of Boston, Spalding and Bourne is fairly concentrated, so that there would be no economic difficulty in supplying all the inhabitants.

(12) Although the populations are fairly concentrated at Holbeach, Crowland, Long Sutton and Sutton Bridge, we have assumed that it would not be economically possible, to lay mains so as to supply all the scattered houses and farms, and have assumed that 85 per cent. of the total population is supplied.

(13) In the case of the Rural Districts, with the exception of Crowland, we have taken 75 per cent. of the population as representing the economic limit.

(14) It is well to take a fairly wide outlook in considering the needs of the future, and in Table No. 2 we have taken the year 1961, which shows a total population of 106,000 persons (see Column 4) based on the increase of the period 1911-1921, and that the total number supplied (Column 6) would be 89,600 based on the assumptions set out above and the factors shown in Column 5.

RATE PER HEAD FOR DOMESTIC SUPPLY.

(15) The rate per head for domestic supply in Spalding is about 15 gallons per diem ; this is expected to be increased to 20 gallons when the new sewerage scheme is in operation.

(16) The rate per head supplied by the Boston Waterworks Company is 18.8 gallons per diem, and the total quantity supplied is about 425,000 gallons a day.

(17) The rate per head in the Spalding Rural District averages about 10 gallons but rises to 15 gallons per head per diem.

(18) The rate per head for the Bourne Supply afforded by the Spalding Urban District Council, is 23 gallons per head owing to leakages, but is being reduced.

(19) Judging from these figures, we have assumed that it would be sufficient to allow for 20 gallons per head per diem for Boston and the Urban Districts including Crowland, and 15 gallons per head per diem for the other Rural Districts.

(20) From Table No. 2, Column 9, it will be seen that the total quantity of water required under the above assumption would amount to 1,610,000 gallons per diem.

TRADE SUPPLIES.

(21) The Spalding Urban District Council afford large trade supplies which, for the period 30/6/28 to 31/3/29 averaged 186,000 gallons per diem, and we have assumed the requirements in that respect as being 200,000 gallons per diem.

(22) In addition to the ordinary trade consumers, we understand that they are under obligations to supply a Sugar Beet Factory up to a maximum of 1 million gallons per diem.

(23) The total daily requirements, assuming that this factory were drawing to its limit, would therefore be 2,810,000 gallons per diem, as shown in the Table No. 2, Column 9.

AVAILABLE SOURCES OF SUPPLY.

BOURNE.

(24) The most prolific source of supply is that belonging to the Spalding Council at Bourne, from which also the Bourne Council are supplied with 100,000 gallons a day, and the Sugar Beet Factory with 1,000,000 gallons a day during three winter months.

(25) At present only one of three boreholes available is used. This is 13 inches in diameter and 134 feet deep, It is sunk into a bed of the Lower Oolite Series, known locally as the "Lincolnshire Limestone," which was entered at a depth of 10 feet from the surface, and which is overlain by a bed of clay.

(26) The water issuing from this borehole is under artesian pressure, which fluctuates seasonally from 10 to 20lbs. per square inch, and this pressure is used for night supply, the pumps augmenting the pressure during the remainder of the day.

(27) A recent test carried out by Mr. Demain, the Engineer of the Spalding Council, showed that the yield of the borehole when discharging freely into the tank at the pumping station with the valve fully open, was 3,600,000 gallons a day.

(28) The other two boreholes, which discharge freely at the surface, were, in March, 1925, estimated to yield a further 900,000 gallons a day.

(29) There are also springs which enter St. Peter's Pond and which appear to yield about 1,500,000 gallons a day.

(30) Altogether it may be taken that there are between 5 and 6 million gallons of water a day available for supply.

(31) The water is of good potable quality and is not treated in any way.

(32) The supply to the Bourne Council is given at the Pumping Station. The Spalding Council supply and that for the Sugar Beet Factory is taken by a 12-inch main $10\frac{1}{2}$ miles long, and a 16-inch main $12\frac{1}{2}$ miles long, which terminate at the Water Tower in Spalding. This water tower has a capacity of 32,000 gallons, and a top water level of approximately 60 O.D.

(33) During the period when the Sugar Beet Factory is being supplied, the estimated daily demand on the Bourne source in 1961 will be :—

Spalding Council	.....	.....	.....	450,000	gallons
Bourne Council	.....	.....	.....	100,000	„
Sugar Beet Factory	.....	.....	.....	1,000,000	„
				<hr/>	
				1,550,000	„
				<hr/>	

(34) There is therefore a surplus available from the borehole now in use of some 2 million gallons per diem, or more than sufficient to meet the requirements of the whole area of supply.

BOSTON WATERWORKS COMPANY.

(35) Another source of supply is that at present controlled by the Boston Waterworks Company.

REVESBY RESERVOIR.

(36) This is substantially a surface water supply derived from a catchment area of some 1,900 acres, and fully to utilise the yield of this area requires an impounding storage of 140 million gallons. Were this available, we estimate the maintainable yield at 500,000 gallons a day.

(37) It is difficult to arrive at any reliable estimate of the supply which can be derived from this source.

(38) The Town of Boston, the Parish of Skirbeck and the Hamlet of Skirbeck Quarter are within the Statutory Limits of Supply, and the Company also affords supplies to houses in the Rural District of Sibsey which border the road along which the mains are laid between Miningsby Reservoir and Boston.

(39) We are informed that the quantity supplied amounts to 425,000 gallons per diem as an average throughout the year when there is sufficient water, but in dry years the reservoir capacity cannot maintain that supply.

(40) We believe that this source can only be relied on to yield about 300,000 gallons per diem in a period of drought.

(41) The water after treatment in the form of aeration, pre-filtration, slow sand filtration and chlorination, gravitates from a small tank at the headworks with a top water level of 117.30 O.D. to Boston, where it is again filtered and rendered potable by pressure filtration, and passed into the distribution system. By night the pressure is that due to the water tower, which has a top water level of 70 O.D. and a capacity of 45,000 gallons, and during "poak" hours the water is boosted by electrically operated pumps.

(42) We have received reports on the character of this water both bacteriological and chemical, which show

- (a) That the water passing into the mains at Revesby was unsatisfactory in character.
- (b) That after the second filtration the character of the water varies, being sometimes considered as totally unfit for domestic purposes, and sometimes stated to be wholesome and safe, there having been an improvement during the period when the samples were taken (27/8/29 to 29/10/29).

(43) We can say with reasonable confidence, that if the treatment at the headworks is brought into line with modern standards, the resultant water will—withstanding the fact that the gathering ground is largely cultivated—be of good potable quality.

(44) Proposals have been put forward by the Company for the provision of increased storage at Revesby. We have given these proposals full consideration, and have come to the conclusion that such works should not be constructed if good potable water can be obtained by the means to be presently described, at an expenditure which will be less than if these works were constructed.

SPALDING RURAL DISTRICT COUNCIL.

(45) Mr. Silcock, the Consulting Engineer to this Council, has kindly furnished us with the following particulars :—

PINCHBECK SUPPLY.

(46) This bore is carried down to a total depth of 212 feet, passing through a thickness of 70 feet of Oxford Clay overlain by 18 feet of soil, sand, and clay, reaching the Lower Oolite formation at a depth of 88 feet, and the Lincolnshire Limestone from which the supply is drawn, at a depth of 184 feet.

(47) It is lined with a tube $8\frac{1}{2}$ inches external diameter for a depth of about 135 feet, continued by a tube $6\frac{1}{2}$ inches external diameter, until the Limestone is reached.

(48) The water escapes under artesian pressure which has varied between 12 and 23lbs. to the square inch (28 to 53 feet) during the last six years.

(49) The supply from this source is distributed in the Parishes of Pinchbeck, Weston, Moulton and Cowbit.

(50) The supply amounts to from 60,000 to 70,000 gallons per diem and is afforded to a population of 4,455 persons, and supplies are also given for agricultural purposes to 340 farms.

(51) We understand that the pressure is that of the artesian head at the borehole only, which is quite insufficient to give a supply at adequate pressure throughout the district.

DEEPING SUPPLY.

(52) Two boreholes have been sunk in the Parish of Deeping, that at Deeping St. Nicholas, which is 3 inches in diameter and lined to a depth of 239 feet, having been carried to a depth of 293 feet, the last 54 feet being in the Lincolnshire Limestone from which the supply is derived.

(53) We are informed that about 540 persons are supplied from these boreholes, but the quantity supplied is not known, and we have no information with regard to the pressure under which this supply is afforded.

DONINGTON SUPPLY.

(54) The Donington bore supplies the Parishes of Donington, Quadring and Gosberton, and it is estimated that 1,530 persons are now supplied, which will be increased to 2,000 when certain extensions of the mains now contemplated have been carried out.

(55) This bore is carried to a depth of 210 feet, the Lincolnshire Limestone, from which the supply is derived, being reached at a depth of 169 feet. The tube through which the water is discharged to the surface is $3\frac{1}{2}$ inches external diameter.

(56) The populations in all the parishes supplied from the various boreholes amounted to 12,262 persons in 1921, and it appears that about 7,000 persons, or 57 per cent., are now taking the water.

(57) The distributing mains which have been laid are shown by full blue lines on the map sent herewith, the total length being about 54 miles, and the mains which are about to be laid, shown by dotted blue lines, would bring the total up to about 72 miles.

WAINFLEET.

(58) Wainfleet obtains a bulk supply of filtered water which is derived from the River Steeping, and the Spilsby Rural District Council have laid the distribution mains, but the supply is afforded at only a few lbs. pressure.

PROPOSED SCHEME.

(59) The water of the Bourne Springs is excellent in quality and abundant in quantity, and we would advise that it be utilised in conjunction with the existing Boston supply for the whole area in the manner to be presently described.

(60) The total quantity of water required has been given as amounting to 2,810,000 gallons per diem when the Sugar Beet Factory is drawing 1 million gallons per diem.

BOSTON WATERWORKS.

(61) These works cannot be relied on to supply more than 300,000 gallons per diem.

SPALDING RURAL.

(62) The Parishes of Deeping, Pinchbeck, Donington, Quadring, Gosberton, and Surfleet, lie at no great distance from the boreholes which now supply them, but owing to the distance of the sources from the Parishes of Cowbit, Weston, and Moulton, it would be more economical to supply from the Bourne Springs rather than to increase the pressure of the Spalding water so as to afford a supply at adequate pressure throughout these districts.

(63) We have therefore assumed that a population amounting to about 8,000 persons will continue to be supplied from the Spalding Rural boreholes, which will require an average daily supply of 120,000 gallons.

(64) Deducting the water derived from the Miningsby Reservoir at Boston, it would be necessary to pump an average daily quantity of about $2\frac{1}{2}$ million gallons at the Bourne Pumping Station, assuming that the Sugar Beet Factory were taking its full quota of 1 million gallons per diem.

BOURNE PUMPING STATION. (Not shown on map).

(65) The pumping station at Bourne is equipped with two heavy oil-driven pumping units, each capable of delivering 40,000 gallons per hour, or 960,000 gallons per diem, against a head of 40lbs., and both units have to be worked together when the Sugar Beet Factory is taking a supply, so that there is then no standby plant.

(66) In order to provide for seasonal fluctuations in demand, plant should be established capable of pumping $3\frac{1}{4}$ million gallons per diem.

(67) We would therefore propose that a pumping station be erected and equipped with three heavy oil pumping units, capable of pumping 1.6 million gallons each to a pressure of 100lbs. per square inch, one unit being a standby.

(68) We estimate the capital cost of this pumping station, equipped as above, at about £12,000.

(69) It is proposed to erect two water towers, marked "A" and "B" on the map, into which the water pumped from the Bourne would discharge less such quantity taken en route,

(70) The water in the towers would deal with diurnal fluctuations of supply in Spalding, and enable the plant at Bourne to pump at a more or less uniform rate throughout the 24 hours.

(71) The top water of the tanks at " A " and " B " would be 75 feet above O.D. and in order to force the required quantity through the 16-inch and 12-inch mains, it would be necessary to raise the pressure at the pumping station to 100lbs. per square inch.

(72) The annual working expenses would amount to about £1,850, and, assuming repayment in 50 years on the building, and 20 years on the plant, the annual interest charges would amount to about £900, giving a total annual cost of about £2,750.

(73) The total quantity of water pumped per annum when the whole of the district is being supplied, and assuming the Sugar Beet Factory took their full quota for three months, would amount to about 640 million gallons, and the cost of pumping works out at about 1d. per 1,000 gallons.

EXISTING MAINS BETWEEN BOURNE AND SPALDING.

(74) There are two pumping mains, one 16 inches internal diameter and about $12\frac{1}{2}$ miles long, and the other 12 inches internal diameter, having a length of about $10\frac{1}{2}$ miles.

(75) If the water towers are provided to meet diurnal fluctuations and the pressure is raised to 100lbs. at the pumping station, these mains will be capable of passing the water required according to the estimate.

(76) We considered as an alternative that all water required for the supply of Boston was derived from the Bourne Springs, but it became evident that to force the increased quantity through the mains to Spalding, would subject them to an excessive pressure, and would necessitate the laying of another pumping main.

(77) The water supplied to Spalding would amount to 1,450,000 gallons per diem when the Sugar Beet Factory is taking its full quota; about 450,000 gallons per diem would pass eastwards, and 510,000 gallons per diem northwards, to supply the districts to be presently described.

MAINS TO SUPPLY SPALDING RURAL, EAST ELLOE RURAL DISTRICT, CROWLAND, HOLBEACH, LONG SUTTON, AND SUTTON BRIDGE.

(78) It is proposed to lay a 9-inch main connected with the 16-inch and 12-inch pumping mains at Spalding to the eastern boundary of the Urban District, where Water Tower " A " would be erected capable of holding 100,000 gallons, the top water level being 75 feet above O.D., and the estimated capital cost £4,000.

(79) After leaving this tower the pressure would have to be raised by 80lbs. per square inch by means of automatic booster pumps, in order to give an adequate pressure in the mains and distribution pipes as far as Sutton Bridge and Crowland.

(80) Two water towers marked " C " near Long Sutton, and " D " at Crowland, each containing 50,000 gallons, have been provided for the reasons already stated, at a capital cost of £3,000 each,

(81) We estimate the capital cost of the boosting station at £2,500, and the annual working expenses at about £800, including capital charges and working expenses.

(82) The total annual quantity dealt with would be about 164 million gallons, when the districts have all been supplied, the cost working out at approximately 1.2 pence per 1,000 gallons pumped.

(83) A 7-inch diameter main has been laid by the Spalding Rural Council from the Spalding-Boston Road near Pinchbeck, which enters the road between Spalding and Holbeach just east of the booster station, and this main continues along the latter road as far as the western boundary of the East Elloe Rural District, and a main 7 inches in diameter has been laid through the Parish of Whaplode.

(84) It is proposed to connect these two mains, to pull up the main between the Spalding-Boston Road and the Spalding-Holbeach Road, and to relay it along the latter road through the Parish of Whaplode.

(85) The booster pump would draw water from the tower, and would deliver it through these two mains as far as the eastern boundary of Whaplode, where they would be connected to a 9-inch main to be laid through the Holbeach Urban District to the eastern boundary, where it would join the mains which have been already laid through the East Elloe Rural District, Long Sutton to Sutton Bridge.

(86) In order to supply Crowland and the southern portion of the East Elloe Rural District and the Holbeach Urban District, a branch main would be laid 5 inches in diameter, which is shown by a red line on the map, to the water tower at Crowland, marked " D " on the map.

(87) The distribution pipes would branch off from the mains described, those already laid by the Spalding Rural Council being shown by blue lines on the map.

(88) The distribution pipes which will be required in the East Elloe Rural District, Holbeach, Long Sutton, Sutton Bridge, and Crowland, are not shown on the map, as the actual length to be laid will require a detailed investigation of the districts on the ground, but an allowance has been included in the estimate for the provision of such pipes as would appear to be required from a study of the Ordnance Maps.

SUPPLY OF BOSTON RURAL DISTRICT, BOSTON URBAN DISTRICT, SIBSEY RURAL, AND PARTS OF SPILSBY AND HORNCASTLE RURAL DISTRICT.

(89) The supply required to augment the quantity obtainable from the Boston Waterworks, amounts to about 510,000 gallons per diem, and it is proposed to lay a 10-inch main from the Water Tower at " B " to a water tower marked " E " on the map just to the N.E. of Boston, following the Spalding-Boston Road.

(90) A Booster Station, drawing water from the tower at " B," would be provided, raising the pressure by about 70lbs. in order to force the water through this long length of main, at a capital cost of £2,100, the cost of raising the pressure of the water being about $\frac{3}{4}$ d. per 1,000 gallons.

(91) Distribution pipes would be taken off en route to supply the Boston Rural District south of the River Witham.

(92) The water tower near Boston marked " E " on the map would have a capacity of 100,000 gallons, and is estimated to cost £4,000

SUPPLY TO SPILSBY RURAL DISTRICT, BOSTON RURAL DISTRICT NORTH OF THE WITHAM, AND THE PARISH OF SIBSEY.

(93) The quantity required for this area amounts to an average of 190,000 gallons per diem, and a ring main 6 inches in diameter, would be laid as shown on the map, passing through Butterwick, Benington, Old Leake, Wrangle, Friskney, Wainfleet, Thorpe St. Peter, Stickford, Stickney, and Sibsey.

(94) This main has a total length of nearly 36 miles, and in order to maintain a sufficient pressure in the distribution pipes connected therewith, it would be necessary to raise the pressure by 40lbs. by means of a booster station, drawing water from the water tower at "E."

(95) The capital cost of this booster station would amount to £1,200 and the annual working expenses to approximately £300, the cost of pumping the water being about one penny per 1,000 gallons.

(96) A water tower would be provided at the point marked "F" on the map, capable of holding 50,000 gallons, at a capital cost of £3,000.

REMAINDER OF SIBSEY RURAL DISTRICT, AND PARTS OF HORNCASTLE RURAL DISTRICT.

(97) The total quantity of water required for this area amounts to about 60,000 gallons per diem, and can most economically be given from the Revesby Reservoir.

(98) An examination by Mr. Burgess of the water leaving the present filter at the reservoir, showed that it was not suitable for domestic supply, and we would therefore propose to instal an up-to-date filtration plant at an estimated cost of £5,000, to purify the water entering the main.

(99) We have shown on the map a ring main from which the water would be distributed, commencing at Revesby, and terminating at Frithville, passing through Mareham-le-Fen, Tumby, Reedham, Langrville, and Thornton-le-Fen.

ESTIMATE.

(100) The estimated cost of the works which have been described above amounts to £320,000 (see Table No. 3) which includes a provision for the laying of 150 miles of distributing pipes.

(101) The actual length of these pipes would have to be determined in consultation with the Local Authorities concerned, but we believe that this estimate will be found to be approximately accurate.

FORMATION OF JOINT WATER BOARD.

(102) There are two ways in which a Water Board might be formed.

A.

(103) The Taf Fechan Water Board, which supplies a large area in the mid-Wales coalfield, is responsible for the supply of water to the various authorities concerned, laying the necessary mains to the boundary of their districts, the Local Authorities being responsible for the distribution of the water, laying the necessary pipes at their own expense.

(104) The actual cost of the water to the Board is ascertained annually, and a charge is made per 1,000 gallons actually supplied, subject to each Authority having to pay for a certain minimum supply, which is referred to as their "minimum reservation," whether they take it or not, i.e., each Authority would pay a certain sum "X" each year, which is based on the cost of the Water and the quantity of their reservation. If they took more than that quantity, which they are entitled to do up to a certain maximum quantity, they pay the cost price for each additional 1,000 gallons.

(105) It is sometimes necessary for the Water Board to lay a pipe through the district of one Local Authority "A," in order to enable them to supply another "B," and this main would be of service to Authority "A" through whose district it passed. In such cases a certain proportion of the cost of the main lying within the boundary of Authority "A" is repaid to the Board.

(106) The Merthyr Tydfil Corporation owned one of the reservoirs from which the supply was derived, and were constructing another at the date when the Board was formed.

(107) The Board became responsible for all debt charges incurred by the Corporation in respect of the works of supply, the capital, interest, and repayment charges being included in the cost of the water.

(108) Certain Authorities lay close to the sources of supply, and therefore the cost of supplying them with water was less than others, but it was agreed that a uniform cost throughout should be adopted.

(109) A complication which was not dealt with in the Taf Fechan Water Supply Act, 1921, arises when a Local Authority has entered into an arrangement to supply a large bulk consumer or another Local Authority at a cost which has been made obligatory by an agreement.

(110) Such a complication arises in the present case as Spalding have entered into agreements to supply Bourne at 3d. per 1,000 gallons, and Sugar Beet Factory on a sliding scale according to quantity taken, varying from 2d. to 6d. per 1,000 gallons.

(111) In the case of a Local Authority, the obligation to supply a large bulk consumer such as the Sugar Beet Factory, might be taken over by the Board.

(112) Another point to be taken into consideration would be that the cost of the water supplied to a Local Authority whose sources of supply had been taken over, should not be greater than if they had continued to supply their own consumers from those sources.

(113) The Taf Fechan Board was formed so that the representation of each Authority on that Board was in proportion to their "reservations."

(114) In the case of this supply it was a comparatively simple matter to determine the sum which would be recoverable by the Board from a Local Authority through whose district water was conveyed for the supply of a more distant consumer, as it only occurred in one case.

(115) In endeavouring, however, to apply the principles set out above to the area under consideration, we have been met with great complications, and their application would entail far too heavy a burden being thrown on some Authorities, and we have therefore dismissed this basis as unworkable.

“ B.”

(116) The scheme which appears to be most practicable in your case would be to form a Board on which all Authorities concerned would be represented according to the amount of water they required, and that the Board should take over the sources of supply and distribute the water throughout the whole area on a uniform basis as to charge.

(117) In this case it would be necessary to purchase the undertakings of the Spalding U.D.C., the Boston Water Company, and the pipes of the Spalding Rural lying within the area bordered by the blue line on the map

(118) For obvious reasons it is not desirable to put forward at this stage an estimate of the cost of purchase in detail, but we are of opinion that a total sum of £150,000 should be sufficient.

(119) Adding this sum to the cost of the new works to supply the whole area, a total of £470,000 is arrived at.

(120) Assuming that the period of repayment of the loan were fixed at thirty years, and that the money were borrowed at 5 per cent. interest, the annual loan charges would amount to £30,500.

(121) To this would have to be added the working expenses, including pumping, maintenance, supervision, and collection of rates, which we estimate at £8,500 per annum, bringing out a total charge of £39,000 per annum.

(122) In arriving at this estimate we have omitted the item of “ rates ” levied by the Local Authorities within whose area the works are situated, for two reasons.

- (a) That it is a very complicated matter to arrive at the rates which would be payable, and
- (b) That as the works would lie within the boundary of the districts actually supplied, the money paid in rates would be merely transferred from one pocket to another.

(123) The question of the most desirable method for repayment to a Local Authority of the money which they had spent on the works taken over, is a matter on which you should be advised by an Accountant.

(124) In cases where the money has been borrowed some time ago, a portion of the original loan has already been paid off, but this has been done at the expense of that Authority, and it would appear reasonable that repayment should be based on original cost and not on the amount of the loan outstanding at the date of purchase.

(125) In the case of the supply to Bourne and the Sugar Beet Factory, we would recommend that the obligations under the agreements be taken over by the Board.

(126) In conclusion, we believe that the scheme we have outlined is by no means prohibitive on the score of cost.

(127) As an illustration of the capital cost of supplying water, the Spalding Urban District Council have expended about £95,000 on their works for a population of 16,000 persons, including Bourne, or at a cost of nearly £6 per head of the population, whereas the total population in the area of supply amounts to practically 100,000 persons, the capital cost being at the rate of less than £5 per head of the population.

(128) Assuming that there are five persons in each house, the average annual charge would be about £2 per house supplied.

(129) In conclusion, we have to express our thanks to those gentlemen who have kindly furnished us with the information regarding the existing undertakings.

(130) The figures given in this report are approximate only, but are, we believe, sufficiently accurate to guide the members of the County Council in coming to a decision.

We are,

Yours faithfully,

SIR ALEX. BINNIE, SON & DEACON.

APPENDIX.

TABLE No. 1.

Showing the Population within the Area to be supplied.

	1911.		1921.	
HOLLAND.				
Boston Borough	16,673		16,100	
Holbeach U.D.C.	5,259		5,381	
Long Sutton U.D.C.	2,837		3,192	
Spalding U.D.	10,308		10,702	
Sutton Bridge U.D.	2,156		2,342	
	<hr/>	37,233	<hr/>	37,717
Boston R.D.	21,057		21,944	
Crowland R.D.	2,683		2,704	
East Elloe, R.D.	8,690		9,482	
Part of Spalding R.D.	3,550		3,737	
	<hr/>	35,980	<hr/>	37,867
 PARTS OF LINDSEY.				
Sibsey R.D.	2,985		3,028	
Part of Spilsby R.D.	7,503		7,850	
Part of Horneastle R.D.	3,198		3,123	
	<hr/>	13,686	<hr/>	14,001
		<hr/>		<hr/>
		86,899		89,585
		<hr/>		<hr/>

TABLE No. 2.

1. District.	2. Population 1911.	3. Population 1921.	4. Estimated Population 1961.	5. Proportion supplied.	6. Population supplied.	7. Rate per head in galls. per diem.	8. Quantity supplied galls. per diem.	9. Quantity supplied galls. per diem.
Bourne U.D.	4,343	4,319	5,000	1	5,000	20		100,000
Spalding U.D.	10,308	10,702	12,500	1	12,500	20		250,000
East Elloe Board :								
East Elloe R.D.	8,690	9,482	11,000	.75	8,000	15	120,000	
Holbeach U.D.	5,259	5,381			(approx.)			
Long Sutton U.D.	2,837	3,192						
Sutton Bridge U.D.	2,156	2,342						
	10,252	10,915	13,500	.85	11,500	20	230,000	350,000
Crowland R.D.	2,683	2,704	2,800	.85	2,400	20		48,000
Spalding R.D. (Part) :								
Parish of Weston	817	864						
Parish of Moulton	2,226	2,345						
Parish of Cowbit	507	528						
	3,550	3,737	4,500	.75	3,400	15		51,000
Boston R.D.								
South of River Witham X1	10,183	10,687	12,000	.75	8,000	15		120,000
North of River Witham X2	5,637	5,883	7,000	.75	5,250	15		78,000
Boston Waterworks Co. :								
Boston U.D.	16,673	16,100						
Parish of Skirbeck	4,036	4,174						
Parish of Skirbeck Quarter	1,201	1,200						
	21,910	21,474	22,000	1	22,000	20		440,000
Spilsby R.D. (Part)	7,503	7,850	9,200	.75	6,900	15		103,000
Sibsey R.D.	2,985	3,028	3,200	.75	2,400	15		36,008
Horncastle R.D. (Part)	3,198	3,123	3,000	.75	2,250	15		34,000
	91,242	93,904	106,000		89,600			1,610,000
Spalding U.D. Trade Supply							Total	200,000
Sugar Beet Factory								1,000,000
Less Boston Waterworks Co.								2,810,000
						Total of Bourne Supply		300,000
								2,510,000

X1 Exclusive of Skirbeck Quarter. X2 Exclusive of Skirbeck.

APPENDIX.

TABLE No. 3.
COST OF NEW WORKS.

Pumping Station at Bourne	.....	.....	.....	£ 12,000
Booster Stations	.....	.....	.....	5,800
Water Towers	.....	.....	.....	21,000
Trunk Mains : 92 $\frac{3}{4}$ miles	.....	.....	.....	153,000
Distributing Pipes : 150 miles	.....	.....	.....	114,000
Filtration Plant at Revesby, etc.	.....	.....	.....	14,000
				<hr/> £319,800 <hr/>

Say £320,000.

Report of County Medical Officer of Health. BOSTON WATER SUPPLY.

(Present Position). Sept. 5th, 1929.

The source of supply of water is from the Miningsby Beck, the extent of the gathering ground being approximately 3 square miles. The Beck feeds the storage reservoir, which latter has a top-water area of 36 acres and a capacity of 85 million gallons, and is in fact not a constructed reservoir at all, but merely a lake surrounded by trees. The Miningsby Beck is in no sense a spring, and in times of drought runs completely dry, which is not surprising as it is only a small stream draining the surrounding agricultural land. Since June of this year the Beck has been dry, and the storage reservoir has become what is really a large pond of stagnant water. During the past three or four weeks the water, as obtained from taps within the Borough of Boston, has been discoloured (brownish) and has given off a very disagreeable odour, which is much more evident on boiling the water.

In order to ascertain whether this water was fit for drinking purposes the Borough M.O.H. sent a sample to the Royal Institute of Public Health for chemical and bacteriological examination, and on the receipt of the reports (copies of which are appended) he immediately issued posters showing householders the necessity for boiling the water. It will be seen from the accompanying reports that the water is grossly contaminated and quite unfit for human consumption.

In my official capacity I have from time to time made visits of inspection to the reservoir, works and adjoining land, and have also seen copies of the several analyses of the water which have been made. Some of these reports show that even in normal times the *Bacillus Coli* has been found in samples taken in the town. In fact, reference to this was made as far back as 1925 in my Survey Report for that year. One is not surprised at these reports, as I have myself seen cattle wading, if doing nothing else, in the Beck near its entry into the reservoir.

It will thus be seen that this water is neither more nor less than surface water, with all the risks of pollution common to such supplies, and the suggestion that extra storage capacity should be made near the present reservoir should receive most careful consideration, as such a measure can in no way improve the quality, but only increase the quantity.

In my opinion it is high time that the question of the provision of water from deep wells in the chalk should pass from the sphere of discussion to that of achievement.

[COPY.]

Reg. No. 5139.

Report sent 30/8/29.

ANALYST'S REPORT ON SAMPLE OF WATER.

Name of Sender : Insp. J. H. Evans, Borough of Boston.

Date received : August 27th, 1929.

Particulars on label : From standpipe attached to Water Company's Main,
in Granville Street, Boston.

CHEMICAL.

Physical Characters.

Reaction—Alkaline.

Colour in 2ft. stratum—Turbid, greenish.

Suspended matters—Appreciable amount of vegetable matter ; some
worms were present.

Odour when warmed to 37 degrees Cent.—Not Normal

Chemical Characters.

		Pts. per 100,000	Grains per gall.
Total solids dried at 100 degs. Cent.	.....	21.60	15.05
Loss on ignition (after re-carbonating)	.....	6.00	4.20
Chlorine	.....	2.70	1.89
Chlorine x 1.647—Sodium Chloride	.....	4.44	3.10
Nitrites	.....	Nil	
Nitrogen as Nitrates	.....	trace	
Saline Ammonia	.....	0.008	0.0056
Albuminoid Ammonia	.....	0.084	0.058
Oxygen absorbed in 3 hours at 37 degs. Cent.	.....	0.29	0.20
Hardness Total	.....	8.50	5.95
Hardness Temporary	.....	—
Hardness Permanent	.....	8.50	5.95
Poisonous Metals—Lead	.....	nil	
Copper	.....	nil	

REMARKS.

The figures for the albuminoid ammonia and oxygen absorbed are high and indicate an excess of organic matter which the bacteriological examination shows to be of a harmful nature. The physical characters are also unsatisfactory. The water is unsuitable for domestic purposes in its present condition.

(Signed) WILLIAM R. SMITH, Knt.,

M.D., D.Sc., F.R.S.Ed.,

Principal.

[COPY.]

ANALYST'S REPORT ON SAMPLE OF WATER.

BACTERIOLOGICAL.

Name of Sender : Inspector J. H. Evans, Borough of Boston.

Date received : 27/8/29.

Particulars on label : From standpipe in Granville Street, Boston.

The sample was packed in ice.

QUANTITATIVE ENUMERATION OF BACTERIA.

On gelatine plates kept for 3 days at 20 degs. Cent. 640 colonies per 1 c.c. developed, of these 210 or 33 per cent. liquified gelatine.

On Agar plates kept for 24 hours at 37 degs. Cent. 220 colonies per 1 c.c. developed.

EXAMINATION FOR SPECIAL BACTERIA.

B. Coli (types) present in 1 c.c.

B. Enteritidis Sporogenes present in 5 c.c.

Streptococci present in 0.5 c.c.

RESULT OF EXAMINATION.

These results show this sample of water to be totally unfit for domestic purposes on bacteriological grounds.

The shortness of time had not allowed a fuller examination of the type of coliform organisms present, the report of which will follow.

(Signed) WILLIAM R. SMITH, Knt.,

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Principal.

